

County Borough



of Blackpool.

# ANNUAL REPORT

OF THE

Medical Officer of Health

FOR THE YEAR 1905,

BY

Francis J. H. Coutts, M.D.; D.P.H. (Vic.); F.C.S.

*Medical Officer of Health and  
Medical Superintendent to the Infectious  
Diseases Hospital.*

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Blackpool:

H. MAXWELL & CO., CHURCH STREET.

1906.

# HEALTH COMMITTEE.

**1905-1906.**

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Mr. ALDERMAN T. H. SMITH, Chairman.

Mr. COUNCILLOR LAURIE, Vice-Chairman.

Mr. COUNCILLOR BROADHEAD (Mayor). Mr. ALDERMAN HEYES.

Mr. COUNCILLOR	BAMBER	Mr. COUNCILLOR	FIELDING
"	"	"	"
"	BANCROFT	"	GATH
"	"	"	"
"	H. BROWN	"	HAMPSON
"	"	"	"
"	CARTLEDGE	"	HARDMAN
"	"	"	"
"	CATTERALL	"	HILL
"	"	"	"
"	CHADWICK	"	IREDALE
"	"	"	"
"	CHARNLEY	"	LEACH
"	"	"	"
"	COCKER	"	PARKINSON
"	"	"	"
"	DEFTY	"	ROBINSON
"	"	"	"
"	DEWHURST	"	TOPHAM
"	"	"	"
"	EAVES	"	WHITESIDE

*MEETINGS:—Usually the third Wednesday  
of the month.*

## SANITARY GENERAL SUB-COMMITTEE.

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Mr. ALDERMAN T. H. SMITH, Chairman.

Mr. COUNCILLOR LAURIE, Vice-Chairman.

Mr. COUNCILLOR BROADHEAD (Mayor).

Mr. COUNCILLOR	CARTLEDGE	Mr. COUNCILLOR	COCKER
"	"	"	"
"	CATTERALL	"	HILL
"	"	"	"
"	CHADWICK	"	ROBINSON
"	"	"	"
"	CHARNLEY	"	WHITESIDE

*To the Mayor Aldermen and Burgesses of the  
County Borough of Blackpool.*

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MR. MAYOR AND GENTLEMEN,

I have pleasure in submitting herewith my Fifth Annual Report and it is gratifying to be able to state that the year 1905 has been marked by considerable progress in various matters affecting the Public Health.

For the fourth year in succession I have to record the fact that our gross death-rate is lower than in any year since the incorporation of the Borough in 1876, whilst our nett death-rate is lower than for any year on record, except 1894.

Ever since 1899 there has been a steady fall each year, both in the gross and in the nett death-rates; the gross death-rate, which in 1899 was 17.88, was only 14.52 in 1905. The reduction from 1904 to 1905 was only slight, 0.24 per 1,000, but it is to be expected that the rate of diminution would be less as the figures become smaller. Of course we cannot expect this decrease to continue without any fluctuations. Still we have the remarkable fact on which we may congratulate ourselves that the rate has steadily fallen for now six years in succession.

The Zymotic Rate is also low—in fact, the lowest on record, except that for the year 1892. Of the Zymotic deaths in 1905, nearly half were from summer diarrhœa, one of the two zymotic diseases not notifiable in Blackpool, and five-sixths of these diarrhœa deaths were in children under one year of age.

This brings me to the question of Infant mortality. Over one quarter of all the deaths under one year of age during 1905 were due to summer diarrhœa or other affections of the gastro-intestinal system. It is true that the infantile death-rate in Blackpool in 1905 shows a considerable reduction on that of 1904, but it is still as high as the average rate for England and Wales. Gastro-intestinal diseases are precisely the class in which a considerable reduction might be brought about by greater care in the feeding of children, and it is in this direction probably that the greatest good would result from the work of a Female Sanitary Inspector.

I regret very much, therefore, that it was decided to defer the question of the appointment of such an officer, and I trust that when the matter comes forward again for consideration the Council will decide to make the appointment.

The records in Part III. of this Report show the large amount of work done in the way of remedying sanitary defects, and the quality of the work has been such as will likely prove of permanent benefit.

Pressure of other matters has prevented us from carrying out the administration of the Factory and Workshop Act, 1901, as fully as it requires, but I hope that more attention may be paid to this increasing branch of our work in 1906.

The supervision of the food supplies of the town has been very thorough, and this is a matter of great importance in Blackpool.

The much-needed extensions to the Sanatorium have now been completed, and will prove a very valuable auxiliary in the task of endeavouring to prevent the spread of infectious diseases.

The attempt to put the Shop Hours Act, of 1904, into operation by means of a general closing order applicable to the winter months failed to gain the consent of the Council. I understand there are certain trades which will still persist in the endeavour to obtain a sectional order.

I should be very glad to see carried into effect the scheme advocated so frequently by Dr. Anderson, namely, the provision of bath houses for the poorer districts of Queenstown and Revoe. I also think that public wash-houses would be a great boon in these districts.

Part IV. of the Report deals with the work of the Meteorological Observatory, which now occupies a considerable part of the time of some members of my office staff. The records of last year, however, particularly in regard to sunshine, were so favourable that we may be satisfied that they have enhanced the reputation of the town as a health resort.

Once more I express my deep appreciation of the kindness and support I have experienced during the year from the members of the Sanitary Committee, and the Council generally.

To my fellow-officials in the service of the Corporation I have to tender my grateful acknowledgments for much kind assistance and advice willingly rendered.

It is only right also to express publicly my great satisfaction with the zealous staff of the Health Department—both clerks and inspectors, who have loyally and efficiently carried out their sometimes arduous and unpleasant duties, and have cheerfully sacrificed their leisure time when required for the service of the town.

I am,

Mr. Mayor and Gentlemen,

Your obedient Servant,

**FRANCIS J. H. COUTTS,**

*Medical Officer of Health.*

PUBLIC HEALTH OFFICE,

MARCH, 1906.

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# County Borough of Blackpool.

## STATISTICAL SUMMARY, 1905.

Situation :—Latitude  $53^{\circ} 49'$ ; Longitude  $3^{\circ} 3' W$ .

Area of Borough (exclusive of foreshore) .....	3,495 acres	
Area of foreshore.....	478 acres	
Population (Census, April 1st, 1901) .....	47,348 persons	
Persons per House as per Census .....	4.766	
	1904	1905
Rateable Value (General District Rate).....	£450,768	£457,817
Do. (Borough Rate).....	£461,384	£468,414
Number of Dwelling Houses on Rate Book .....	11,766	11,977
Do. do. do. empty ...	272	188
Population of Residents estimated at middle of year from number of inhabited houses ..	54,338	55,712
Density of Population (persons per acre) .....	15.55	15.94
Number of Births .....	1,170	1,131
Birth Rate (per 1,000 inhabitants) .....	21.53	20.30
Number of Deaths .....	802	809
Death Rate (gross, per 1,000 inhabitants) ....	14.76	14.52
Number of Deaths of Visitors .....	128	129
Death Rate (corrected for Visitors) .....	12.40	12.21
Do. (corrected for age and sex distribu- tion; factor for 1901 Census 1.093 ....	13.55	13.35
No. of Deaths from seven principal Zymotic Diseases .....	76	65
Zymotic Rate (per 1,000 inhabitants) .....	1.40	1.17
Do. (corrected for Visitors) .....	1.29	1.01
Number of Deaths of Children under 1 year of age (Infantile Mortality) .....	199	153
Infantile Mortality (per 1,000 Births) .....	170.09	135.28
Infantile Mortality (corrected for Visitors).....	160.68	127.32

## AREA.

The Municipal Borough of Blackpool comprises the township of Layton-with-Warbreck, part of the township of Marton, and that part of the township of Bispham-with-Norbreck known as Bispham Hawes. The following is the area of the Wards exclusive of the foreshore :—Claremont 689 acres, Talbot 540 acres, Bank Hey 49 acres, Brunswick 520 acres, Foxhall 686 acres, and Waterloo 1,011 acres.

## DENSITY OF POPULATION.

The mean density of population for the whole Borough is equal to 15.94 persons per acre :—In Claremont Ward it is 13.72, Talbot Ward 23.22, Bank Hey Ward 39.06, Brunswick Ward 16.19, Foxhall Ward 23.11, Waterloo Ward 7.45.

## ELEVATION.

The mean elevation of the Borough is about  $28\frac{1}{2}$  feet above sea level, and varies between about 97 feet at Warbreck Hill, and about  $9\frac{1}{2}$  feet in the field north of Bloomfield Road (West).

Blackpool presents the curious condition that the main direction of the natural drainage is away from the sea. Commencing at the north end, there is a depression near the Gynn Inn, not extending far inland, and then the land rises to the top of Warbreck Hill, with a short slope towards the sea, and a longer slope inland. There is a long slope also in a southerly direction to about the Manchester Hotel, where the main sewer outfall is situated. South of this, to the boundary between Blackpool and St. Annes, the surface is very flat, and averages only about 20 feet

above sea level. The main natural drainage of the northern part of the Borough is by means of a watercourse, known as the Layton Dyke (for part of its course the boundary between Blackpool and Hardhorn), into Marton Mere, and thence into the Wyre, and thus into the sea at Fleetwood.

### GEOLOGY.

The town may be roughly divided into two portions ; the first being that north of the Central Station, and having a subsoil of glacial boulder clays, the two beds being separated by sands and shingle, together at Norbreck reaching more than 100 feet in thickness, and resting on an ancient plane of marine denudation cut in the new red marls which, east of Fleetwood are salt bearing ; the rock salt being thicker than any in Cheshire. The second, which lies south of the Central Station, consist of peat, lying on the glacial drift. This bed of peat is of varying thickness of 10, 20, or even 30 feet, being overlain with a greater or less thickness of blown sand. North of Blackpool it reappears at Rossall, and is associated with a submerged forest.


The boulder-clay subsoil extends beneath Claremont, Talbot, Bank Hey, and a portion of Brunswick Ward, and also the easterly portion of Foxhall Ward. The portion of Brunswick Ward from the Central Station to Princess Street, and to a short distance east of the coast railway line, has a peaty sub-soil, which, in this locality, comes nearly to the surface, and is of variable depth, rendering the ground very treacherous in places. The remainder of Foxhall and Waterloo Wards has a good depth of blown sand over-lying the peat, except in

isolated places. In parts of this portion of the Borough the sand is very fine, and in the ground it has almost the consistency of mortar.

*(I am indebted to Mr. C. E. De Rance, F.G.S., for kindly supplying me with information in regard to the Geology of the District).*

#### SEWERAGE.

The District is drained as follows :—

(i) By the chief system of sewers which drains by gravitation the Borough except those portions mentioned below. This empties into a large sewer chamber, under Rigby Road and Tyldesley Road, which is egg-shaped, being thirteen feet in vertical diameter, and nine feet across at its widest part. The Lytham Road Sewer, which is a pipe one, enters this chamber from the south, and the Bonny Street culvert from the north, as well as the old culvert beneath the Promenade, whilst the inland main sewer empties into it from the east.

(ii) A small sewerage system which carries the sewage from Little Layton by gravitation into a tank situated in a field east of the Cemetery, whence it is pumped daily into the terminus of the inland main sewer in Layton Lane, down which it flows by gravitation. This system was extended during 1902 by a sewer 430 yards long from the bridge at Little Layton, up St. Walburga's Road to the Convent ; the drains of this institution being now connected to this sewerage system, and the cesspool formerly in existence there abolished.

(iii) The drainage from the district east of the portion of Lytham Road south of the South Shore Station, and east of the railway line south of the Destructor, extending inland to Middle Lane and Central Drive, flows by gravitation to

a tank at the Destructor, whence it is pumped into a new sewer chamber under the extension of Rigby Road, connected to the old one, whence sewage can flow by gravitation to the sea.

(iv) The district east of Middle Lane and south of Cow Gap Lane is drained by gravitation to a pumping station at the corner of Cow Gap Lane and Bloomfield Road, whence it is pumped into the tank at the Destructor mentioned under (iii).

The sewage collected by all these systems discharge into the sea. An iron outfall of three feet diameter has been carried out to sea 800 yards, so as to deliver the sewage below extreme low-water mark. Valves, fixed in a penstock chamber beneath the Promenade, serve to keep all sea water from the sewage chambers and sewers whilst the outfall is tide-locked. It was formerly arranged for discharge of sewage to take place only whilst the tide is receding,  $1\frac{1}{2}$  hours after high water until 2 hours before low-water, so as to insure all sewage being completely carried away. During September, 1904, this was altered so that sewage discharges from  $1\frac{1}{2}$  hours after high-water to the time of low water. Spen Dyke, one of the principal water-courses of the district, originally emptied through an open watercourse into the sea near the Manchester Hotel. Later the last few hundred yards were covered in, forming a culvert alongside the sewer chamber discharging at the foot of the hulking. In the last few years this culvert has been extended some distance inland, and, recently the outflow of the culvert has been turned into the penstock chamber, into which the main sewer runs (the chamber being divided by a partition separating the Spen Dyke water from the

sewage) and the Spen Dyke water now flows out by the old iron sewer outfall extended to the same point on the foreshore as the new sewer outfall.

Arrangements have been made in connection with the reconstruction of the penstock chamber necessitated by the widening of the Promenade, to construct storm overflow pipes, to relieve the sewage chambers during heavy rains with an incoming tide, and also for a pumping chamber, if required, for use when the sewerage system is full at high tide.

(v) A smaller system takes the sewage from a portion of Claremont Park, and from an estate in Claremont Ward, which contains Cheltenham, Chesterfield, Clifford, Carshalton, and Handsworth Roads, &c., and also from a portion of the Gynn Estate, outside the Borough in the district of Bispham. This sewage flows by gravitation to an outfall at the Gynn, which extends seawards to a distance of 440 yards, sewage discharging at all states of the tide.

#### COLLECTION OF EXCRETA AND HOUSEHOLD REFUSE.

The water-carriage system of dealing with excreta is practically the only one in use in Blackpool. On the outskirts of the Borough there are a certain number of cesspools (about 14) receiving excreta, exclusive of cesspools on farms emptied by farmers on their own land. These are being gradually abolished with the extension of the sewerage system. About 36 houses with pail closets still exist, and 26 with privies. In addition there are 11 pail closets for the gipsy encampment at South Shore, and for two other encampments in Talbot Ward.

In connection with the fair ground at South Shore, the occupiers of the land, at my suggestion, erected a wooden building for sanitary purposes to meet the requirements of stallholders and attendants on the various shows, as also for the use of visitors. This building contains a row of urinals, the urine being collected into galvanised pails, emptied every day, and also earth-closets for males and females, but instead of dry earth a mixture of sawdust and a disinfecting powder is employed, a charge being automatically ejected on to the excreta each time the closet is used. The whole arrangement has worked very satisfactorily and without any nuisance being occasioned.

As regards the collection of household refuse (ashes and dry refuse) open wooden tubs with handles are in use in a large number of cases, but these are being discouraged, galvanised iron ash-bins with covers being substituted when new receptacles are necessary. Ash-pits of the old deep form are being abolished under notice as occasion allows.

During 1905, systematic inspections of certain parts of the town have been carried out and a large number of houses were found without proper ash receptacles. In compliance with notices served 287 houses have been supplied with galvanized iron ash-bins.

The refuse is collected from the ash-receptacles weekly, but, during the season, in some portions of the town a daily collection is made; the refuse collected is entirely dealt with at the Destructor, 17,108 tons being destroyed during 1905.

## WATER SUPPLY.

This is under the jurisdiction of the Fylde Water Board, a body composed of representatives from Blackpool, Lytham, St. Annes, and Fleetwood. The water is now laid on to every inhabited part of the Borough, and is an up-land surface water derived from the Bleasdale and Grizedale Fells. The gathering ground is a good one, but the water derived from it is soft and of a peaty nature, and occasionally contains a good deal of sediment, detracting from its appearance. This is particularly likely to occur in streets where the branch supply pipes come to a dead end, and sometimes complaints have been received (from occupiers of houses in such streets) of the sediment in the water. The trouble could probably be entirely obviated by more frequent flushing of such branch supply pipes.

During 1903, the Fylde Water Board commenced to make an immense new reservoir on their property, near the gathering grounds, which will largely increase the reserve stock of water available during any prolonged drought, and which should render the Fylde District secure from any chance of water famine for many years to come. This reservoir is estimated to cost £137,727, and to contain when completed 332 million gallons.

## SEWER VENTILATION.

The system of ventilating the sewers is by open gratings near the manhole covers at the level of the street. A few high ventilating shafts are in existence in certain parts of the Borough. The ventilating gratings at the street levels are certainly at times very objectionable, and I think it is necessary to provide far more of the high

ventilation shafts at suitable positions, and in some cases at least to do away with the ventilating gratings in the streets.

It has been left to the Borough Surveyor and Medical Officer of Health to consider the needs of one particular area of the Borough at a time and to prepare a scheme for the satisfactory ventilation of the sewers in that area.



# REPORT.



## PART I.—VITAL STATISTICS.



### POPULATION.

At the Census—April, 1901—the enumerated population of Blackpool was found to be 47,348 persons. At the middle of 1905 the Registrar-General calculated the population of the Borough as 57,550. According to the usual method of calculating populations at inter-censal periods by the assumption of an increase or decrease in the same ratio as during the decennium preceding the last census, the figure should have been 63,373, but as mentioned in my last report, the Registrar-General informed me, in response to an inquiry, that he had adopted a different method from the usual for the calculation of our population, as it was very unlikely that the extraordinary rate of increase shown during the last decennium would be maintained. There is no doubt that the increase in population in Blackpool has proceeded in a very much smaller ratio during the last few years, and as will be seen, my own estimate for the middle of 1905, is even lower than the lower figure given by the Registrar-General's methods.

I went very thoroughly into the methods of estimating populations early in 1904 owing to the importance of the question of Blackpool's true population in relation to the application to be constituted a County Borough. I then came to the conclusion that the method adopted by my predecessor, and continued by myself, of estimating the population by means of an enumeration of inhabited

houses, and the use of the census factor of persons per house gave the most accurate results.

At the County Borough Enquiry the figures thus obtained could not be successfully controverted, and before the Parliamentary Committee they were accepted as sufficient evidence that our population exceeded the necessary 50,000.

I think, on the whole, the method gives a very fair average resident population for the town, because although the winter population may be slightly less, the summer population of residents is greatly in excess, as there is no doubt that the census factor is too small even for residents only during the summer months. When we consider the large number of domestic servants, shop attendants, and others engaged in the work of the town, who come here for the season only, and when we take into account the large influx of hawkers and street vendors, we can easily see the *resident* population is greatly increased during the season. All these have to be counted as residents should infectious disease or death overtake them whilst here for work, and therefore some allowance must be made for them in estimating the *average resident population* of the town for the year. Of course no regard whatever is paid in this connection to the enormous crowds of visitors for health or pleasure who come to the town.

The estimated population for 1905 has been obtained by multiplying the number of inhabited houses (as found by the Overseers at the August-September enumeration for rate purposes) in each of the six wards of the town, by the Census factor shewing the average number of persons per inhabited house in each ward at the date of the Census.

These Ward populations added together give the total population of the Borough at the end of August. To bring this to the middle of the year, one quarter of the increase since the previous September is subtracted. The figure thus obtained for the middle of 1905 was 55,712, and I am confident that this is not by any means too high for the average resident population of the town for the year.

The August-September figures are as follows :—

WARD.	Inhabited Houses.	Population	Empty Houses.
Claremont .....	1,977	9,454	18
Talbot .....	2,575	12,538	29
Bank Hey.....	401	1,914	1
Brunswick .....	1,770	8,421	37
Foxhall.....	3,449	15,854	61
Waterloo .....	1,617	7,531	42
Total.....	11,789	55,712	188

The number of inhabited houses in the whole Borough in August-September, 1905, was 11,789, as compared with 11,494 in August, 1904—an increase of 295; and the resident population was estimated at 55,712, as compared with 54,338—an increase of 1,374.

All the rates in this report are calculated, unless the contrary is expressly stated, on the estimated resident population of 55,712, which is probably a more correct estimate of the average resident population for the year than the figure given by the Registrar-General, viz., 57,550.

The increase over last year's estimated population is 1,374, made up of 451, the natural increase (excess of births over deaths), and 923, the excess of immigrants into, over emigrants from the Borough.

Five of the Wards have shown an increase in population during 1905, the greatest being 584 in Foxhall. Brunswick comes next with an increase of 268, then Waterloo with 242, Claremont with 213, and Talbot with 80 ; Bank Hey has a decrease of 13.

For comparison of the population and other statistics for the years 1895 to 1905, the Tables I. and II. in the Appendix may be consulted. These have been drawn up to compare exactly with similar Tables in former Reports, corresponding to the old form of Tables I. and II. of the Local Government Board. In column 10, Table I., the deaths of all those looked upon as visitors, or non-residents of the Borough, are tabulated. In column 8 is given the death-rate of all deaths belonging to the district, and in column 13, the nett, *i.e.*, the resident death-rate. But, as stated in previous Reports, the Local Government Board have changed the form of these tables in this respect, that only those *non-residents* dying in *public institutions* within the district may be excluded in calculating the nett death-rate. This regulation is manifestly unfair to health resorts, especially such as Blackpool, to which visitors come in enormous numbers. It practically means that the deaths of a population, at certain times probably exceeding 150,000 are credited to a population of 55,712. In 1905, we have estimated that 129 persons died whilst in Blackpool on temporary visits. Only 16 of these died in the Victoria Hospital, or the Sanatorium, and these 16 are all that may

be deducted from the total number of Deaths in calculating Tables I. and II. of the Local Government Board, under the new system.

There are several factors which in certain cases tend to make the death-rate in health resorts appear higher than one would expect. Among these are the presence among the resident population of a considerable number who have come to live in the place owing to delicacy of constitution, or to a breakdown of health, either general or due to some specific disease, such as phthisis. It is evident that quite an untrue idea of the healthiness of a district such as ours is given by the gross figures. But notwithstanding these drawbacks, the *gross* death-rate of Blackpool was only 14.52 per 1,000, which is the lowest on record. The Local Government Board Tables will be found in the Appendix (Tables XI., XII., XIII., XIV., and XIVa, but, as above stated, I have also given in Tables I. and II. the Statistics calculated according to the old method.

#### BIRTHS.

During the year there were 1,123 births registered in the Borough, to which must be added as belonging to Blackpool, 8 births in the Kirkham Workhouse, giving a total of 1,131, as compared with 1,170 last year. Of the 1,131 births, there were 597 males and 534 females. The birth-rate was 20.30 per 1,000 living, as compared with 21.53 last year, 26.46 for the quinquennium 1896-1900, and 22.33 for the quinquennium 1901-1905. For England and Wales the rate during 1905, was 27.2 per 1,000. For the 76 great towns the rate was 28.2 per 1,000, and for 141 smaller towns it was 26.9. The birth-rate is therefore 1.23 per 1,000 lower than in 1904, 6.16 below the average for the 5 years 1896-1900, 2.03 below the average for the five years

1901-1905, and 6.9 below the average for England and Wales for 1905.

The order of the Wards as regards birth-rates is exactly the same as last year, viz. :—Talbot, Foxhall, Waterloo, Claremont, Brunswick, and Bank Hey, varying from 25.68 in Talbot to 12.02 in Bank Hey. Talbot and Foxhall are the Wards which have probably the largest proportion of residential houses as apart from company houses. They are also the Wards (see p. 29 of 1902 Report) which have the males and females between the ages of 20 and 45 more nearly equal, therefore probably contain the largest number of married couples at the reproductive period of life. Claremont and Bank Hey probably contain more *single* and *widowed* women engaged in the business of company-house keeping and otherwise looking after visitors. These considerations would help to account for the variations in the birth-rates. Foxhall, although containing a considerable number of company-houses near the front, has a large residential population at the back of the Ward.

In Table III. (Appendix) will be found the full figures for comparison of all the Wards for the years 1904-1905, and the averages for the two quinquennia 1896-1900 and 1901-1905 ; the number of births for each Ward during 1905 will be found in Table XII. (Appendix).

The births include 69 illegitimate children—40 boys and 29 girls. The percentage of illegitimate births of total births was 6.10, and the rate of illegitimate births was 1.24 per 1,000 inhabitants. This rate is lower than in 1903, or 1904, but higher than in 1902. Amongst 1,000 females between the ages 20 and 45 years, \* there were 82.70 births, including 5.05 illegitimate births.

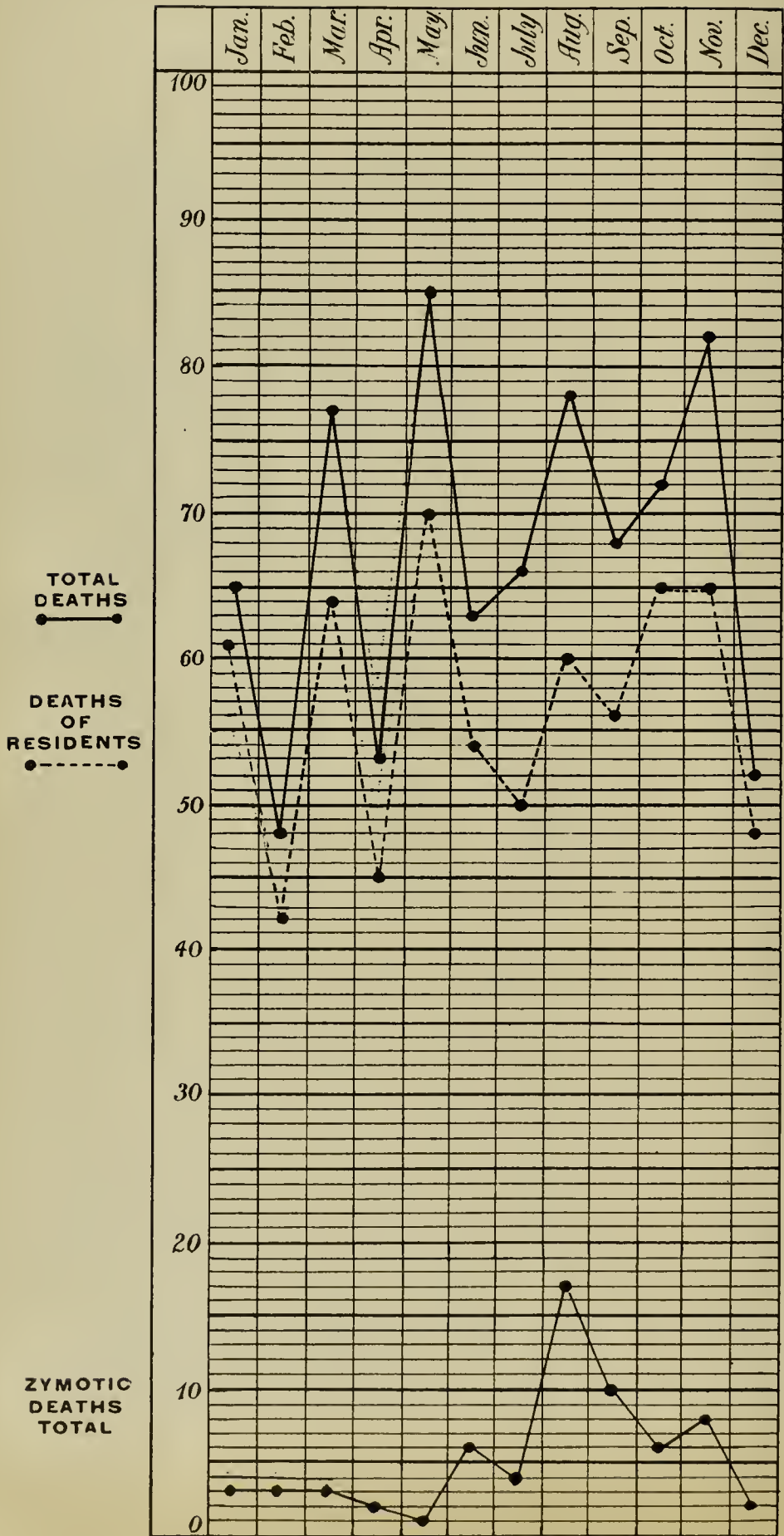
\* Calculated on there being 13,676 females at child-bearing age—20 to 45.

## DEATHS.

The number of deaths registered during the year was 809, and of these 129 were of persons staying temporarily in the town, and therefore classed as visitors, and not included in the estimated population of 55,712 persons. There were, therefore, 680 deaths of residents during the year—including 25 deaths in Kirkham Workhouse (which is out of the Borough), and 4 residents who died whilst away from Blackpool, and whose deaths have been reported to me by the Medical Officer of the District in which they died. The gross death-rate was 14.52, and the rate for residents only 12.21 per 1,000. The deaths in Kirkham Workhouse are allocated (in calculating Tables II. and III.) to the Wards in which the patients last resided. The nett death-rate, corrected for age and sex distribution (according to the age and sex distribution at the 1901 census to render it comparable with the Registrar-General's rates for other districts) was 13.35. The death-rate for England and Wales during 1905 was 15.2 per 1,000, for the 76 great towns 15.7 per 1,000, and for the 141 smaller towns 14.4 per 1,000. The death-rate for Rural England and Wales was 14.9 per 1,000. The gross death-rate for Blackpool, therefore, even though including the deaths of all visitors for 1905, was lower than the average death-rate in the rural districts of England and Wales, and considerably lower than the average death-rate in the large towns. When the deaths of visitors are deducted, the figures are still more favourable testifying to the healthy condition of Blackpool during 1905 ; but at the same time, considering that the corrected death-rate (taking into account age and sex distribution) was 13.35, there is yet room for improvement, and I think it should be possible to reduce the corrected death-rate to 12 or lower.



CHART I (Deaths, 1905)



In Chart I. will be found a representation by a graphic method of the deaths for every month of the year amongst (1) the total population ; (2) residents only ; (3) the deaths from the 7 zymotic diseases (small-pox, diphtheria, scarlet fever, diarrhœa, whooping cough, measles, and “ fever ”) It will be found that amongst residents the largest number of deaths occurred in May, and the smallest number in February and April. The highest number of deaths for any one month, including visitors, occurred in May. The largest number of zymotic diseases took place in August and September, owing to the number of deaths from zymotic diarrhœa.

In considering the chart it must be remembered that they do not refer to “ calendar,” but to statistical months, and that whilst March, May, August, and November refer to five week periods the others refer only to four week periods.

#### DEATHS OF RESIDENTS.

The death-rates from all causes are highest in Talbot Ward, 14.60, and lowest in Bank Hey, 6.79. The other Wards come as follows :—Foxhall, 13.81 ; Claremont, 11.32 ; Brunswick, 10.21 ; Waterloo, 9.56. Applying the factors for correction shown on page 25 of the 1902 report the following order is obtained :—Talbot, 15.81 ; Foxhall, 14.72 ; Claremont, 12.60 ; Brunswick, 11.70 ; Waterloo, 10.21 ; and Bank Hey, 7.86. For zymotic diseases the death-rate was highest in Foxhall and lowest in Waterloo. (See Table III.)

## SEX.

In Table IV. (see next page) the deaths and death-rates of the two sexes are separated, and it will be noticed that under five years of age the male death-rates much exceed the female—41.55 to 27.32. Between 5 and 15 the female death-rates are slightly higher than the male, as also between 15 and 25. At every age-period, therefore, except between 5 and 25 the male death-rates in proportion to the number of males at that age living, exceed the corresponding rates for females. Between 35 and 65 the discrepancy is particularly noticeable.

## DEATHS AT VARIOUS AGES.

Of the 809 deaths, residents and visitors combined—

153 occurred in children under one year	Per cent.
of age .....	18.91
61 between the ages of 1 and 5 .....	7.54
401 between the ages of 5 and 65 .....	49.57
194 in persons over 65 .....	23.98
<hr/> 809	<hr/> 100.00
<hr/>	<hr/>

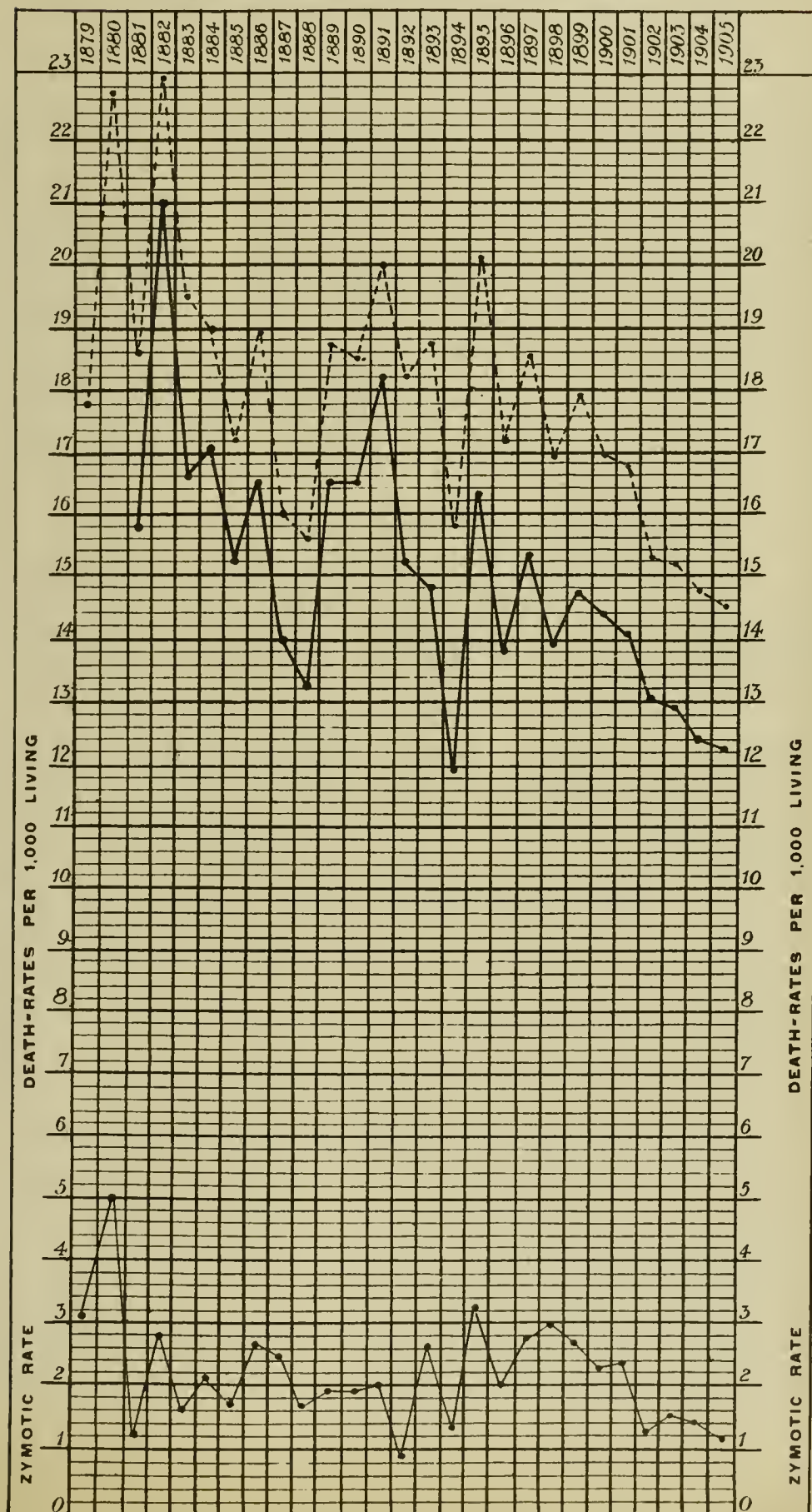
Table G. (Appendix) shows the percentage of deaths under 5 years of age and over 65, for each year, from 1884 to 1905.

It is worth noting that the percentage of deaths of persons over 65 is higher than for any year since 1887, whilst the percentage of deaths of persons under five years of age is smaller than for any year since 1884. This, of course, is an encouraging circumstance, and is accounted for by the lower infant mortality and the smaller zymotic rate.

# CHART II. DEATH-RATES (1879-1905).

Gross Death-Rate. - - - - - Nett Death-Rate. —————

Total Death-Rate from Seven Zymotic Diseases. —————





The deaths and death-rates per 1,000 living, at each age period, of residents only, are shown in Table IV., from which it will be seen that 197 out of 680 occurred under the age of five years. Between 5 and 15 there was a total of only 22 deaths, and only 30 at the ages 15 to 25. Between 25 and 65 the deaths numbered 273. There were 99 persons who died over 65 years of age and under 75 ; and 59 who exceeded the age of 75 years. That is, 23.24 per cent. of all the residents who died during 1905 exceeded the age of 65 years, as compared with 19.29 per cent. in 1904.

**TABLE IV.**

POPULATION AND DEATH-RATES (RESIDENTS)  
AT VARIOUS AGES.

	BLACKPOOL, 1905.								England and Wales 1891-01	England and Wales 1891-01	
	Per cent. of population living at various ages (1901 census)		Number estimated living in 1905		Total Deaths		Death Rate		Death Rates of persons at different ages.	Death Rates of males living at different ages.	Death Rates of females living at different ages.
	Males	Females	Males	Females	Males	F'mls	Males	Females			
Under 5 years ...	5.01	5.32	2,792	2,965	116	81	41.55	27.32	34.22	62.11	52.33
5-15       ,,     ...	8.22	9.04	4,580	5,038	10	12	2.18	2.38	2.29	3.32	3.42
15-25       ,,     ...	8.01	10.96	4,461	6,103	12	18	2.69	2.95	2.84	4.35	3.95
25-35       ,,     ...	8.20	10.60	4,570	5,906	19	21	4.16	3.56	3.82	6.60	5.93
35-45       ,,     ...	6.14	7.80	3,421	4,348	35	25	10.23	5.75	7.72	11.24	9.38
45-55       ,,     ...	4.37	5.80	2,433	3,232	45	40	18.50	12.38	15.00	18.53	14.44
55-65       ,,     ...	2.88	3.99	1,606	2,220	45	43	28.02	19.37	23.00	34.24	27.79
65-75       ,,     ...	1.08	1.74	600	967	40	59	66.67	61.01	63.18	69.06	59.35
75-85       ,,     ...	0.31	0.47	172	264	21	28	122.09	106.06	112.39	143.32	128.11
85 and upwards	0.02	0.04	11	23	4	6	363.63	260.87	294.12	281.82	256.14

### INFANT MORTALITY.

There were 153 deaths of children under twelve months old, or 18.91 per cent. of the total deaths. As there were 1,131 births during the year, the infant mortality reached 135.28 per 1,000 births, as compared with 170.09 last year, 135.47 in 1903, and 123.20 in 1902. The infant mortality corrected for visitors was 127.32.

The figures for 1905 show a great improvement on those for 1904; in fact, the gross infantile mortality has only been lower on 4 occasions since 1879, namely, in 1879, 1881, 1887, and 1902, whilst the nett death-rate is lower than any year except those just mentioned, and also 1883.

The infant mortality for England and Wales for 1905 was 128 per 1,000, for the 76 great towns it was 140, whilst for the 141 smaller towns it was 132. For Rural England and Wales it was only 113 per 1,000 births.

Blackpool, therefore, shows practically the average rate for the whole of England and Wales, if the deaths of residents only are considered. But, as I have mentioned, infant mortality rates show considerable fluctuations from year to year, and when the rates for a considerable number of years are examined Blackpool does not occupy the position which we should expect it to hold, considering its great natural advantages. This is well seen in the Table in last Report giving the gross and nett figures for Blackpool for each year since 1879, and the gross infantile mortality for England and Wales. We find that the average rate for Blackpool for 25 years (including visitors) was 155 whilst for all England and Wales it was 146. When we recall the fact that the England and Wales average takes into account the deaths in the over-crowded slums of the large

manufacturing towns, it does appear that Blackpool, instead of having a higher average than for the whole country, should show figures considerably better than those for the rest of the country. That this low infant mortality is not unattainable we may see from the figures of some rural counties, such as Herefordshire, Oxfordshire, Wiltshire, and Somersetshire, in which the infant mortality ranges from about 84 to 88 per 1,000 births, whilst even such large Boroughs as Hornsey and Croydon show figures between 90 and 100. I feel that an Infant Mortality rate not exceeding 100 on the average is what Blackpool should aim at, and I believe it is an ideal which might be achieved.

The effect on the general death-rate which this would bring about may be illustrated by the figures for 1905. The death-rate of residents only (that is, excluding the deaths of persons who came here during the year for health or pleasure) was 12.21 per 1,000. But if the Infant Mortality had not exceeded the ideal mentioned, viz. :—100 per 1,000 births, there would have been a saving of 40 lives of infants. This would have caused our total resident death-rate to have been no higher than 11.49 per 1,000, instead of 12.21 and it would have been absolutely the lowest on record for Blackpool.

It is evident, therefore, how profoundly the Infantile Mortality affects the general statistics of the town. Apart from this, with the shrinking birth-rate, the loss to the community on so many child deaths becomes increasingly serious.

I regret to find that here, as elsewhere, there seems a tendency in certain quarters to treat the question of declining birth-rate, and even that of the large infant mortality with indifference, or even with levity.

I have heard the argument advanced that with the large amount of poverty and unemployment we can afford to look on complacently at the declining birth-rate.

History teaches us, however, that nations with a high birth-rate have shown the greatest progress, energy, and success, and that, on the contrary, a persistently falling birth-rate has been frequently the accompaniment of national decline and decay.

As regards a high infant death-rate I do not see how any thinking man can fail to deplore it intensely.

The death of every child means the loss of so much potential productive energy, and it has been estimated that there is a loss to the nation equal to £150 for every child-death. Apart from this, every such death means an actual waste, as the birth of a child involves the absorption of a larger amount of food by the mother, and an expenditure of vital energy which is rendered possible by a decreased working capacity on her part during the time of gestation, and for some time after. Again, the causes which lead to a high infantile death-rate lead also to a high illness-rate, so that of the children who survive, a good many struggle to maturity with stunted bodies and minds, and with impaired vitality, and tend to swell the statistics in regard to physical degeneration, of which we have heard so much of late.

The effort, therefore, to find some means of reducing the infantile death-rate is one which should receive the earnest and sympathetic consideration of every citizen.

During 1905, as was my bounden duty, after the strong remarks I made on this subject in my last Annual Report, I brought before the Sanitary Committee a suggestion as

to the best means, in my opinion, of attacking the problem, founded on a careful study of the question in its various bearings, and with the knowledge of what had been done in other towns.

From replies received from 89 other places, I found that 45 had either Female Sanitary Inspectors or Lady Health Visitors, and that the universal opinion was that much good had resulted from their efforts. Although in most towns the appointments had not been made long enough to be able to state absolutely that a reduction in the infantile death-rate had actually occurred as a result of their work, the evidence in certain cases was very marked to the effect that such a decrease had already been shown. Consequently, I strongly recommended the appointment of a Female Sanitary Inspector for Blackpool, and then added :—

“ Personally I am quite satisfied that such an officer  
 “ could do good work here in Blackpool. I think that a  
 “ real reduction in the infant death-rate could be  
 “ effected by careful and persistent work of such an  
 “ inspector. Experience of other towns has shown  
 “ that if the Lady Inspector possesses tact and judg-  
 “ ment, and has a pleasant and sympathetic manner,  
 “ she is welcomed into the houses of the poorer classes  
 “ as a friend and helper, and it is very rare indeed to  
 “ find the visit looked upon as an intrusion, or objected  
 “ to in any way. I should suggest that if such an  
 “ appointment be made the Inspector should take round  
 “ to every house in the poorer districts where a birth  
 “ is reported, a leaflet on the feeding and care of child-  
 “ ren, to be prepared by the Medical Officer of Health,  
 “ or in summer, a leaflet on the precautions to prevent  
 “ summer diarrhœa. These leaflets would form a good

“ excuse for a visit, and then the Inspector could make  
 “ an examination of the condition of the house as to  
 “ cleanliness, and give such advice as might be neces-  
 “ sary.

“ Although it would not be possible to reduce the  
 “ staff of male Inspectors in order to make such an  
 “ appointment, I think it is very likely that the ap-  
 “ pointment and work of a Female Sanitary Inspector  
 “ might easily delay the time when it would be necessary  
 “ to get an additional male Inspector, owing to the  
 “ increasing size of the town.

“ I feel very strongly that it would be a wise step  
 “ on the part of the Council to appoint a Female Sani-  
 “ tary Inspector, and I am confident that the bene-  
 “ ficial effect in the diminution of sickness, and the  
 “ lowering of the death-rate among young children  
 “ would be a splendid return for the money required to  
 “ maintain such an officer.”

I regret, that after deliberating on the subject, the Sanitary Committee decided that they could not at present recommend the appointment of a Female Sanitary Inspector, and the further consideration of the matter was adjourned for twelve months.

At the same time, the Committee were quite willing to allow the Medical Officer to prepare a leaflet which could be left at houses where there were young children ; this leaflet to contain warnings as to unsuitable foods and suggestions as to the care of the baby. A leaflet of this description is now in course of preparation, and I shall do all that is possible in the matter with my present staff. It is obvious, however, that a Male Inspector, however willing, cannot get

so readily into touch with the mothers as could a woman visitor of the right stamp. I trust that further consideration of the matter will result in the appointment for Blackpool of a Female Sanitary Inspector at an early date.

Since the memorandum was issued on the question of Female Sanitary Inspectors the results of a remarkable experiment in Huddersfield have been recorded and these show the valuable effects of personal supervision of infants. The Mayor of Huddersfield, offered a money present for each child in a certain district of that town reaching the age of twelve months. In this township (Longwood) the infant death rate had averaged 122. It had been reduced to 62. Ladies systematically visited and advised mothers of newly born children with the result, as the Mayor of Huddersfield said, that "some of the babies who were not expected to live a week were smiling and flourishing up to the time they could receive their birthday presents."

I see that Sir John Brunner has arranged a similar scheme for Northwich.

The hope of bringing about a lowering of the Infantile Mortality rests on the assumption that some of the deaths are from preventible causes. On looking at Table VII. we see in detail the number of deaths during 1905 of children under one year of age from various causes. I have also repeated in a slightly altered form a table which I prepared for the first time last year giving an analysis of the conditions in connection with deaths under one year.

On examining this table (see p. 34) we find that 44 out of 153 deaths under one were certified as due

## DEATHS UNDER ONE.—ANALYSIS OF CONDITIONS IN RELATION TO THE VARIOUS CAUSES—1905.

CAUSES.	1905 totals	QUARTERS.				FEEDING		OVER- CROWDING.			DISTRICT.			MOTHER EMPLOYED		Illegitimate.
		1	2	3	4	Breast only.	Handed chiefly or entirely.	2 Persons or less per bedroom.	More than 2.	More than 3.	Poor work- ing class.	Middle work- ing class.	Better class	Away from home.	At home.	
1.—Premature Births.—Congenital Defects and Malformations .....	44	10	9	9	16	4	33	36	6	2	18	15	11	3	41	8
2.—Debility .....	13	3	2	3	5	1	12	10	1	2	7	5	1	2	10	1
3.—Convulsions and other Diseases of Nervous System .....	12	2	6	1	3	3	9	8	1	3	8	3	1	1	9	4
4.—Diseases of Respiratory System .....	18	8	2	2	6	5	13	10	4	4	13	5	...	4	14	1
5.—Infectious Diseases (Zymotics) .....	3	2	1	...	...	2	1	3	...	...	1	2	...	...	3	...
6.—Tubercular Diseases .....	7	2	3	2	...	...	7	5	1	1	4	3	...	2	5	2
7.—Diseases of Gastro-intestinal tract, (Diarrhoea, &c., Diseases of Stomach, &c.)	43	2	3	27	11	3	38	33	8	1	25	12	5	5	37	5
8.—Natural Causes—Accidents, &c. ....	13	1	4	2	6	1	10	6	5	2	7	6	...	...	13	1
TOTALS .....	153	30	30	46	47	19	123	111	26	15	83	51	18	17	132	22

to premature birth or to congenital defects and malformations. At first sight this seems a cause which we cannot at all prevent ; and no doubt so long as there are so many weakly parents a certain proportion of such cases are inevitable, but on further consideration it appears very probable that some of these premature births, and some of these congenital defects may be due to avoidable causes. Overwork of the mother before the birth of the child, insufficient food for the mother, due to poverty or to excessive expenditure on alcohol, either on the part of the mother or of others, are very likely to lead to such conditions. In regard to the question of overwork it is noticeable that a considerably larger number of deaths in Class I. occurred in the last six months of the year, which means that very probably the unborn child suffered from the excessive strain the work of the Blackpool season threw upon the mother. Class II. deaths from debility suggest a similar explanation, 8 out of thirteen being in the latter part of the year, though, of course, some of these debility cases may have been due to improper feeding. Diseases of respiratory system, deaths from infectious diseases, and deaths from tubercular diseases do not show this excess in the latter part of the year. The remaining large class of cases, deaths due to disease of the gastro-intestinal tract, numbered 43, and 25 of these were due to summer diarrhœa. Thirty-eight of these gastro-intestinal disease deaths took place in the last six months of the year. Altogether 93 out of 153 occurred in the last six months of the year, which means that the fatal illness of the larger number of the deaths under one commenced in the Blackpool season, or in the few weeks following the end of the season.

The figures as to feeding are again most instructive, no fewer than 123 out of 153 having been hand-fed either partially or entirely, ninety-four of the 123 having been altogether hand-fed. Only 19 were reared entirely on the breast, and of these 4 were in Class I. (Premature birth, &c.) and their average age was only 14 days at death. Seven were cases dying from respiratory diseases or infectious diseases in which feeding would have little connection with the result. Only one out of thirteen "debility" cases was breast fed, and only 3 out of 43 gastro-intestinal disease deaths were suckled by the mother.

The columns as to overcrowding show that this does not seem to be a great factor in increasing our infant mortality. In 111 cases out of 153 there were stated to be not more than two persons to each bedroom in the house. Probably this does not quite represent the condition of things at the height of the busy season.

The columns as to the district show again that by far the largest proportion of infantile deaths occurred among the poorer, more ignorant, and more thriftless classes of the community.

In only 17 cases out of the total was it acknowledged that the mother was employed away from home, but it is probable that in many other cases she was so employed until shortly before the birth of the child.

No fewer than 22 out of the 144 deaths of residents under one were in illegitimate children. The deaths of illegitimate children under one in relation to the total illegitimate births works out at the rate of 31.88 per cent., whilst amongst legitimate children the rate is 11.49 per cent.

I may again repeat the conclusions formulated in my last Report that the excessive infant mortality is due partly to ignorance and partly to neglect. There seems to be a common and wide-spread idea that a woman should know by a kind of instinct how to feed and clothe and care for her children, but unfortunately this is not the case. All kinds of foods are given to young children even under six months of age, and when milk is given it is often most unsuitable through partial decomposition, through keeping in a dirty, ill-ventilated place, or through contamination at the time of milking. Again, the dangerous long-tube feeding bottle, with its germ-laden interior is often employed, and no care taken to sterilise either milk or bottle.

I am afraid also that ante-natal or post-natal injury often accrues to children through their mothers having to undergo the strain of the Blackpool season.

Poverty, no doubt, is an important factor in some cases, preventing the provision of suitable food, clothing, and attention, and also exerting an ante-natal influence by the failure of the mother to secure adequate and suitable nourishment, but in many cases this poverty is due to alcoholic excess on the part of one or other of the parents.

In Tables V. and VI., the deaths and death-rates of children under 12 months old, for the years 1901 to 1905, and the quinquennia, 1891-95, 1896-1900, and 1901-1905, are given distributed into Wards.

Number of Children (residents only) under one year old who died in the respective Wards.

**TABLE V.**

WARD.	1891-5	1896-1900	1901-1905	1901	1902	1903	1904	1905
Claremont.....	78	98	125	23	22	26	26	28
Talbot .....	179	271	243	51	47	53	56	36
Bank Hey .....	15	23	16	5	1	3	6	1
Brunswick .....	91	148	83	21	12	11	22	17
Foxhall .....	159	289	268	57	53	50	54	54
Waterloo.....	60	107	84	24	13	15	24	8
Total for Borough .....	582	936	819	181	148	158	188	144

Of the 153 deaths of children under one year of age, 9 were of children not born in Blackpool (nor of Blackpool parents in Kirkham workhouse). Leaving these out of consideration, the corrected Infant Mortality rate for 1905 is 127.32, as compared with the corresponding rates for 1904 of 160.68 ; 1903, of 129.72 ; 1902, 118.4 ; 168.3 for the five years 1891-5 ; 160.2 for the five years 1896-1900 ; and 138.4 for the five years 1901-1905.

Table VI. gives complete figures for infant mortality (residents only) for several years, and also the infant mortality for the separate Wards, from which it will be seen that the Infant Mortality for 1905 was highest in Claremont and lowest in Bank Hey.

In Table C (Appendix) the quarterly rates are given for 1905 (for residents only) from which it will be seen that

the rate was 170.29 for the 4th quarter, 140.84 in the 3rd 102.39 in the 2nd, and 97.12 in the 1st quarter.

**TABLE VI.**

Infant Mortality ; Deaths of Children (residents only)  
under one year old per 1,000 births :—

WARD.	1891-5	1896-1900	1901-1905	1901	1902	1903	1904	1905
Claremont ..	172.5	117.2	142.1	129.9	110.6	152.0	145.3	172.84
Talbot .....	162.8	162.6	151.8	174.1	146.9	154.1	172.3	111.80
Bank Hey...	112.0	157.5	133.6	217.4	40.0	136.4	230.8	43.48
Brunswick ..	168.2	188.3	119.4	128.0	81.6	75.3	163.0	149.12
Foxhall .....	187.2	172.7	143.5	157.0	137.0	126.3	152.1	145.16
Waterloo ...	163.9	151.3	114.1	169.0	75.6	107.9	160.0	57.97
Total for Borough...	168.3	160.2	138.4	155.8	118.4	129.72	160.68	127.32

The causes of deaths under twelve months are classified in Table VII. (Appendix), under several headings, and also according to age at death. As will be seen, the chief causes were Premature Birth, 36 ; Diarrhœa, 25 ; Debility, 13 ; Diseases of Respiratory Organs, 18 ; Convulsions, &c., 12 ; other Diseases of Digestive System, 7.

Eight of these infantile deaths were uncertified, the causes of death being stated to be : Convulsions 5 cases, Premature Birth 2, Hæmorrhage from Navel 1.

Five inquests were held on deaths on children under 12 months, the verdicts being—overlain, whilst sleeping in bed with mother, 1 ; natural causes, 4 ;

During the year there were 1,062 legitimate, and 69 illegitimate births. Of the 8 children born of Blackpool parents in Kirkham Workhouse, all were illegitimate. Among residents only, during the first year of life there were 122 deaths of legitimate, and 22 deaths of illegitimate children. The proportion of deaths under 12 months was thus 114.9 per 1,000 legitimate births, and 318.8 per 1,000 illegitimate births, the mortality being considerably more than twice as large in illegitimate as it is in the case of legitimate children.

The figures of the similar rates for the five years 1896 to 1900 were 154 and 278.8 respectively, and for 1901, 145.5 and 302.6, and for 1902, 115.8 and 172.4, for 1903, 128.0 and 157.1, and for 1904, 148.6 and 342.5.

#### DEATHS OF VISITORS.

In health resorts, where the resident population is reinforced at certain periods of the year by an influx of visitors greatly outnumbering the resident population, it is necessary, in order to get fair figures, to deduct the deaths of those who are staying temporarily in the town. In Blackpool, special enquiries are made in the case of each death, into the length of time the person was resident in the town, and the purpose (health, pleasure, or business) for which they came here. As a result of these enquiries, it is decided whether the deceased was a visitor or not. Even if the deceased has only been here a short time, if he has come with the intention of taking up residence permanently in the town, or if he has come for work, and not for health and pleasure, he is classed as a resident. In 1905 it was decided to exclude 129 deaths as those of

visitors, viz., 72 males, and 57 females. Seventeen were under five years of age, and 112 above. There were 9 deaths from the seven principal zymotic diseases, in some of which cases either infection or invasion of the disease had taken place before their arrival in the town. Valvular and other Heart Diseases accounted for 18 cases, Bronchitis, Pneumonia, and Pleurisy, 11 cases, Phthisis 12 cases, Apoplexy 7 cases, Natural Causes 13 cases, Glycosuria, &c., 5 cases, Cancer 4 cases, Old Age 4 cases, Accident 5 cases.



#### LENGTH OF RESIDENCE IN BLACKPOOL OF PERSONS WHO DIED HERE DURING 1905.

In Table VIII. (in the Appendix) is shewn the length of time persons dying in 1905 had lived in Blackpool, classified in six age groups.

It will be observed that 65 persons who died during 1905 had been residents in Blackpool for over 25 years; and to these should be added 25 deaths of persons over 25 born in Blackpool, making a total of 90. There were 73 with a residence over 15 and under 25 years, and 187 over 5 but under 15 years. Of the 809 deaths, 144 were of persons (not born here) resident in Blackpool less than 12 months; these include the 129 deaths of visitors; 76 of these had been in Blackpool less than one month.

## CAUSES OF DEATH.

In Table IX. will be found a full classification of the causes of death :—Part I., a summary ; Part II., deaths of residents classified under diseases, six age groups, and wards ; Part III., deaths of visitors, similarly classified.

The total deaths may be summarised as follows :—

Zymotic Diseases	.....167	Deaths, or 20.64 per cent.
Dietetic	„ 4	deaths, or 0.49 per cent.
Constitutional	„ 82	deaths, or 10.14 per cent.
Developmental,	„ 72	deaths, or 8.90 per cent.
Local	„ 401	deaths, or 49.57 per cent.
Other	„ 56	deaths, or 6.92 per cent.
Deaths from violence	27	deaths, or 3.34 per cent.

### ZYMOTIC DISEASES.

Of Zymotic diseases Scarlet Fever and Diphtheria show a slight increase, Typhoid Fever a considerable increase over the 1904 figures ; particulars respecting them will be found set out at length in Part II. of this Report. The deaths from the principal Zymotic diseases (Small-pox, Scarlet Fever, Diphtheria, “Fever,” Measles, Whooping Cough, and Diarrhœa), numbered 65 in all, giving a Zymotic death-rate of 1.17 per 1,000 living ; but of these 65 deaths 9 were visitors, and with these deducted the Zymotic-rate for the resident population was 1.01 against 1.29 the previous year, and as compared with 1.52 in England and Wales, 1.88 in the 76 great towns, 1.50 in 141 smaller towns, and 1.09 in Rural England and Wales.

The deaths from the various diseases were as follows :—

Small-pox .....	—
Measles .....	3
Scarlet Fever .....	8
Diphtheria and Membranous Croup .....	11
Whooping Cough .....	3
Fever (Typhus) and Typhoid .....	10
Diarrhœa .....	30

The rates for residents only varied in the different Wards, from 1.45 in Foxhall Ward, to 0.27 in Waterloo (See Table III. in Appendix).

For the total number of cases of each disease in the various Wards, see Tables IX. and XIII.

It is very noticeable that out of the 65 zymotic deaths, no fewer than 33, that is, 50.8 per cent., were due to the only *two zymotic diseases which are not compulsorily notifiable* in Blackpool, *i.e.*, Whooping Cough and Diarrhœa. The other five—Small-pox, Measles, Scarlet Fever, Diphtheria, and Typhoid Fever—combined, only caused 32 deaths out of the 65. I consider that this points very strongly to the view that compulsory notification tends markedly to the reduction of the mortality from infectious diseases.

Particulars as to Scarlet Fever, Diphtheria, Enteric Fever, Puerperal Fever, Erysipelas, and Measles, will be found in Part II. of this Report.

### WHOOPING COUGH.

This disease caused 3 deaths in Blackpool during 1905.

The mortality rate for 1905 came to 0.05 per 1,000 of the population, only one-fifth of the rate for the country generally.

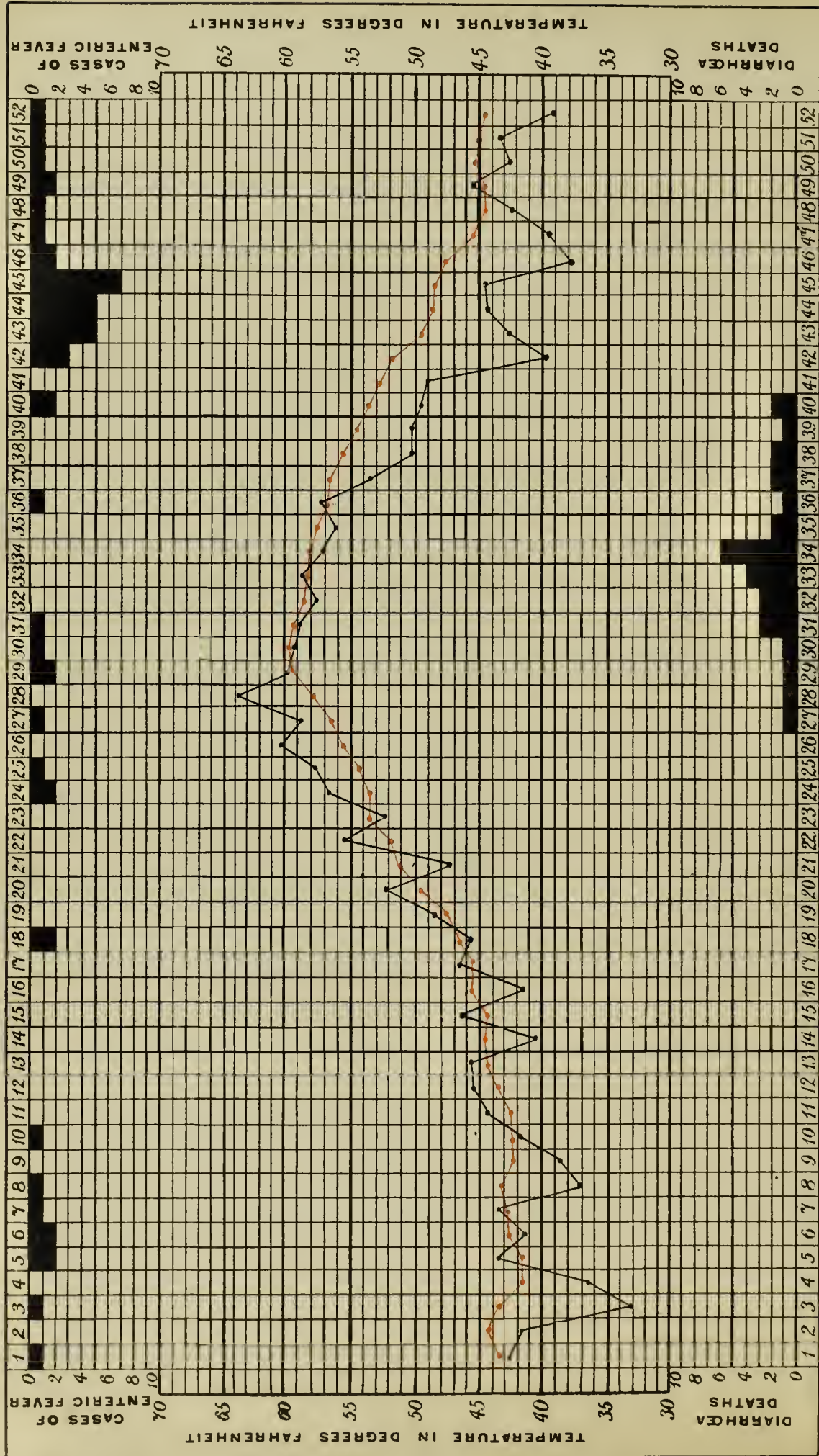
I entered at some length into the question of Whooping Cough in my Report for 1903. As I stated then, the Sanitary Committee did not see their way to advising the Council to have compulsory notification of Whooping Cough as at Plymouth and Southport, but decided to attempt to get voluntary notification through schools and boarding-houses. During 1905, 71 cases have come to the knowledge of the Health Department. Visits have been paid and disinfection by formaldehyde or sulphur fumigation carried out at the end of the case.

### DIARRHŒA.

The deaths from Epidemic Diarrhœa or Zymotic Enteritis were less in 1905 than the previous year, numbering 30, including 3 visitors, as compared with 38 in 1904, 25 in 1903, 10 in 1902, 41 in 1901, 55 in 1900, 81 in 1899, and 101 in 1898. The death-rate from Diarrhœa was 0.54 per 1,000, as compared with 0.70 in 1904. The death-rate in England and Wales during 1905 was 0.59, it was 0.83 in the seventy-six great towns, and 0.57 in the one hundred and forty-one smaller towns. Of the 30 deaths, there were 25 children under one year, and 3 between one and five years; in four cases the children were illegitimate. There were six deaths from Epidemic Diarrhœa in Claremont Ward, 7 in Talbot, 2 in Brunswick, 14 in Foxhall, and 1 in Waterloo.



CHART III (Mean Weekly Temperatures—Air and Soil. Weekly Enteric Cases and Diarrhoea Deaths, 1905)



The onset of the disease in the fatal cases occurred as follows :—One each in the weeks ending July 8th, 15th, 22nd, and 29th, and then a group of 26 cases in the period commencing August 5th, and concluding October 7th.

There was no death in the first or second quarters, 26 in the third quarter, and 4 in the fourth quarter of the year. Each death was carefully enquired into, and in Chart III. the relationship between the highest mortality from Diarrhœa and the temperature of the earth at a depth of four feet is shown.

In the middle part of the Chart the curves show the mean weekly temperature of the air (black line), and the soil as marked by a thermometer kept four feet from the surface of the ground (red line). At the bottom part of the Chart the weekly number of deaths is marked by shaded columns of a size proportionate to the number of deaths. The four-foot thermometer was over 56° F. for eleven weeks in the year, from the 27th week to the 37th. Twenty-five out of the 30 Diarrhœa cases commenced in the fourteen weeks, including the period during which the thermometer was over 56° and three weeks after the last week which averaged over 56°.

The connection of flies with the contamination of foods, and the causation of Diarrhœa is probably a close one. In summer and autumn manure receptacles should be emptied very frequently. It would also be advisable to have streets well watered or flushed in order to keep down dust and to wash away foul material.

#### FEEDING.

In accordance with the custom in previous years, I give Tables prepared from information obtained in cases of

diarrhœa deaths as to feeding and storage of food and insurance. The first Table refers to the character of the feeding in the 25 cases of death from diarrhœa in children under 12 months :—

Character of Feeding.	Under three months.	Over 3 months and under 6 months.	Over 6 months and under 12 months.
Breast .....	.....	.....	.....
Breast and Bottle .....	.....	2	.....
Bottle only .....	4	5	14
Totals .....	4	7	14
Infants' Food as well .....	.....	.....	4

It will be seen that not a single death out of the 25 occurred amongst children fed on breast milk alone.

#### STORAGE OF FOOD.

The following Table gives statistics as to the Storage of Food in houses where diarrhœa deaths have occurred in the last seven years :—

Place.	1899	1900	1901	1902	1903	1904	1905
Pantry .....	19	9	7	3	9	22	9
Scullery or Back Kitchen ...	55	34	31	5	14	10	21
Wooden Safe in Yard .....	2	6	0	0	0	0	0
Cellar.....	2	1	0	2	1	0	0
Sitting-room or Lobby .....	1	4	2	0	0	0	0
No Particulars .....	2	1	1	0	1	6	0

It is noticeable that in 21 cases out of the 30 the food was stored in a scullery or back-kitchen exposed probably to risk of contamination by dirt and to the emanations from untrapped foul slop-pipes, instead of in suitable pantries.

As regards the condition of the streets, in 8 cases out of the 30 the back streets were not formed, and in 2 cases the front street also was unformed.

### INSURANCE.

The following Table gives the particulars obtained under this head for 1905, as compared with 1898-9 and 1900, 1901, 1902, 1903, and 1904 :—

	1898-9	1900	1901	1902	1903	1904	1905
Insured for £5 and over ....	1	0	1	0	0	0	0
„ £4—£5.....	0	0	2	0	1	0	0
„ £3—£4.....	4	3	4	0	2	1	2
„ £2—£3.....	14	2	5	1	2	2	3
„ £1—£2.....	20	8	3	0	5	9	4
„ under £1.....	5	3	0	0	4	6	5
„ Amount not given	0	0	0	3	2	1	0
Totals .....	44	16	15	4	16	19	14

## PHTHISIS AND OTHER TUBERCULAR AFFECTIONS.

Phthisis was returned as the cause of death in 63 instances, including 12 visitors, giving a death-rate of 1.13 ; and, deducting visitors, of 0.92 ; these rates are slightly higher than those of 1904, which were 1.05 and 0.86 respectively.

The large proportion of visitor deaths from Phthisis is to be noted. It is an unfortunate fact that many cases of consumption are sent to Blackpool in a stage of the disease for which the climate of Blackpool is not at all suitable. It cannot be too widely known that although *early* cases of Phthisis, where there is no rapid breaking-down of lung-tissue, and where the general condition is good, often do exceedingly well here, as do also certain cases of chronic Phthisis in elderly people, it is a very great mistake to send persons who are debilitated and unable to stand the strong winds and bracing climate. I am quite convinced that, instead of benefiting, such cases go more rapidly worse here. I think it has been fairly clearly demonstrated by the researches of several observers that strong winds, especially when associated with damp atmosphere and a clay subsoil are prejudicial in cases of advanced Phthisis.

In 5 cases the disease was found on enquiry to be associated with alcoholic intemperance. Probably this was a contributory factor in other cases also. As regards consumption in other members of the same family, it was ascertained that in no less than 26 cases, at least one relative of the disease had suffered from Phthisis.

In 7 cases either the father or the mother had died of Phthisis ; in three other cases both father and mother ; in

another both husband and daughter; in another the mother, the brother, and two sisters; in another the mother and one brother. In 3 cases a brother or sister of the deceased had died of consumption; in three cases either one or more uncles or aunts.

Circulars as to the dangers of infection were sent to the occupier of each house in which a death from pulmonary consumption took place, and an offer made to disinfect free of charge. In 33 cases measures of disinfection were carried out by the officials of the Health Department, and in 19 other cases the occupier of the house made some attempt at disinfection, and refused to allow us to disinfect thoroughly.

There were 24 deaths certified as due to other tubercular affections, 7 being under one year of age. These cases show an increase of 4 over the figures for 1904. Three were visitors, the rest were residents. Ten were cases of tubercular meningitis, 5 were cases of tabes mesenterica, and 9 other forms of tuberculosis. One case certified as due to Diabetes Mellitus of several years' duration had contracted Phthisis, as is not unfrequently the case in this disease, but as the primary cause of death was the Diabetes, the death has been entered under the corresponding heading in Table IX.

I am strongly of opinion that it is quite time that the voluntary notification of Phthisis was introduced here. As is pointed out in a recent circular from the National Association for the Prevention of Consumption, notification is the only practicable basis for any preventive measures in connection with this disease. At present the cases only come to our knowledge on the death of the patient, when it is too late for educational information to do any good.

I regret that the Sanitary Committee could not see their way to recommending the adoption of this voluntary notification, which is in very successful operation in Liverpool, Manchester, Sheffield, and other places. I am afraid the question of the notification fees formed the chief obstacle, but I do not think the Committee realised what a comparatively trifling outlay it would mean.

We had 63 deaths from this disease in 1905, but assuming that 100 cases were notified in a year, the fees would only amount to £12 10s.

The great advantage we should obtain would be that we should be able to confirm the instructions given by their medical men as to precautions in connection with spitting, and the use and disinfection of handkerchiefs, &c.; we could follow up cases in connection with changes of address and arrange for disinfection of rooms vacated by consumptive patients. I think there can be no doubt that often a serious danger exists both to visitors and residents from rooms so infected. The importance of preventing as far as possible spitting in tramcars, on footpaths, and in public-houses is well recognised, and any bye-laws existing which deal with this question should be rigidly enforced.

#### DISEASES OF THE RESPIRATORY SYSTEM.

There were 101 deaths in 1905 from these causes, including 11 visitors, giving a total death-rate of 1.81. Last year, the total number was 114, giving a death-rate of 2.10. From the three principal causes, Bronchitis, Pneumonia, and Pleurisy, the total number of deaths was 94, of which 11 were visitors.

## INFLUENZA.

Influenza was credited as being the primary cause of death in 11 instances in 1905, ten cases being residents, and one a visitor. Two of the resident deaths in the workhouse were from this disease.

## DISEASES OF THE CIRCULATORY SYSTEM.

These caused 88 deaths during 1905, including 18 visitors. The total figure is higher than the preceding year, and the death-rate is 1.58 per 1,000 inhabitants, as compared with 1.21 in 1904. The Comparative figures for a series of years will be found in Table A (Appendix).

## ALCOHOL.

Four deaths of residents were certified as directly due to alcohol—two from chronic alcoholism, and two from delirium tremens. But in 11 cases of cirrhosis of the liver (5 residents and 6 visitors), alcohol played an important part in the causation of the disease, whilst, as I have shown, there was a distinct history of alcoholic intemperance in 5 of the cases of Phthisis, which died during the year. Adding to these 14 other cases in which there was good reason to believe there had been undue indulgence in strong drink, we have 34 cases at least in which alcohol was directly or indirectly associated with the fatal result.

It is extremely probable that in some of the deaths certified as being due to diseases of the heart and blood vessels, or to diseases of the gastro-intestinal system, the fatal result has been accelerated by the excessive use of alcohol. The strong feeling amongst those interested

in the Public Health, that alcohol is a causative or predisposing agent in many fatal diseases, that it is a frequent cause of accidents, and that it often leads to poverty, unemployment, and insufficient supply of nourishing food to many families, has led a considerable number of local authorities during the past year to issue large posters drawing attention to the evil consequences of undue indulgence in alcoholic drinks. Such posters have been issued in several London Boroughs, in Leeds, Hull, Preston, Liverpool, Southport, and other towns, and they are believed to have had a beneficial educative influence.

The following is a copy of the poster issued by Birmingham :—

#### CITY OF BIRMINGHAM.

---

##### *Physical Degeneration and Alcoholism.*

---

Evidence as to the enormous amount of damage done directly and indirectly to men and women by the abuse of alcohol, is apparent in every town. The Health Committee desire to draw attention to this as one of the important causes in lowering the health of the citizens, and rendering them easily susceptible to many diseases.

The Report of the Committee on physical degeneration presented to Parliament by command of His Majesty the King, calls attention to the following facts :—

1. The abuse of alcoholic stimulants is a most potent and deadly agent of physical deterioration.
2. Alcoholic persons are specially liable to consumption and all other inflammatory disorders.

3. A considerable number of men and women become insane as the result of the abuse of alcohol.

4. Drinking habits among women are increasing and these habits are very prejudicial to their offspring. Idiocy, epilepsy, and other diseases carry them off, and too frequently the squalid poverty due to drink causes great hardships on the children.

5. Evidence showed that the abuse of alcoholic stimulants leads to the ruin of families, the neglect of work and social duties, misery, vice, and crime.

6. Alcohol is entirely unnecessary for good health and vigour.

By order of

THE HEALTH COMMITTEE,  
John Robertson, M.D., M.O.H.

#### CANCER.

Various forms of malignant disease gave rise to 58 deaths during 1905, of these 4 were visitors. The total deaths in 1904 were 51 ; there were 55 in 1903 ; 51 in 1902 ; 59 in 1901 ; 49 in 1900 ; and 36 in 1899.

The total death-rate from malignant disease was in 1905, 1.041 per 1,000, as compared with 0.938 in 1904, 1.037 in 1903, and 0.977 in 1902.

The death-rate for 1905 for residents only was 0.969, The following Table shows the total number of deaths, the number of visitor's deaths, the gross death-rate, and the death-rate with visitors deducted, for malignant disease in Blackpool during the last 11 years.

## CANCER MORTALITY IN BLACKPOOL.

YEAR	Total Deaths	Deaths of Visitors.	Gross Death Rate	Nett Death Rate	England and Wales.
1895	19	3	0.577	0.486	0.753
1896	20	3	0.546	0.464	0.762
1897	33	3	0.820	0.746	0.785
1898	29	7	0.638	0.484	0.799
1899	36	2	0.747	0.705	0.826
1900	49	2	0.976	0.937	0.829
1901	59	5	1.162	1.064	0.842
1902	51	4	0.977	0.901	0.844
1903	55	3	1.037	0.981	0.872
1904	51	10	0.938	0.755	...
1905	58	4	1.041	0.969	...

This Table brings out clearly the unmistakeable fact that the mortality from cancer is increasing in Blackpool, and at a more rapid rate probably than in England and Wales generally.

A Table published a year or two ago, giving comparative figures for the Lancashire districts, showed that the Fylde district came fourth on the list, only Garstang, Ulverston, and Ormskirk showing a higher percentage of cancer deaths to total mortality.

I am not disposed to be alarmed at these statistics unless they had been carefully considered from various points of view. For instance, I am inclined to think that the four districts mentioned as showing the highest mortality from cancer, would also show the highest proportion of

deaths in elderly people, *i.e.*, among people who had reached the age when cancer is most likely.

Again, a considerable number of elderly people come to Blackpool to live, some cases, possibly, through slight failure of health, without any pronounced disease being apparent, and these may develop and ultimately die of cancer. It is suggestive, at any rate, to note that 22 out of the 54 *residents* who died of cancer in 1905 had come to this town from other districts within six years from the time of death.

Of the 58 deaths, 35 were in females, and 23 in males.

No fewer than 14 cases were cancer of the liver ; the stomach was affected in 5 cases, the œsophagus in 2, the rectum in 4, the colon in 3, other parts of the bowel in 4 others, so that 32 directly affected the gastro-intestinal tract. The uterus was the organ diseased in 7 cases, the breast in 6, and the ovary in one. There were single cases also involving the lung, the bladder, the tongue, the pancreas, the omentum, the throat pharynx and tongue, the neck, and the orbit. In one case the site of disease was not stated.

There were three cases of sarcoma, one of the clavicle, one of the testis, and one of the kidney.

In 18 cases there was definite history of cancer in relatives. In 4 cases either father or mother had died of the disease, in 4 cases a brother or sister had suffered from the same ; in 6 cases deaths of uncles or aunts had occurred. In two cases the deceased's wife, and in one case the husband, had previously died of cancer, whilst in another instance the deceased had attended her brother's wife, who

died of cancer six years ago. These four cases are suggestive of the possibility of some infective character in certain cases of malignant disease. Very often the friends are apprehensive on this score, and on many occasions we have at their request disinfected the room and bedding used by the deceased.

#### OTHER CAUSES.

Table IX. gives a detailed analysis of the various causes of death during 1905, including the total number of cases of each class of disease, divided into males and females, visitors, and residents, and into various age periods, also the number of cases in each Ward. This is only a summary of the figures contained in our Record Book of Vital Statistics, which gives similar information for each month of the year.

On looking over this book I was struck with the number of cases of diseases of the nervous system in the month of May ; almost exactly one-fifth of all the cases occurring in that one month. Three out of 12 deaths certified as due to inflammation of the brain, 5 out of 8 cases of convulsions, and 4 out of 11 other diseases of nervous system occurred in this one month.

It was curious also that 3 deaths in the Scarlet Fever Wards of the Sanatorium in July and August were due to Meningitis, which has hitherto been a very uncommon complication of Scarlet Fever at the Hospital.

It appears as if either some climatological influences had been at work during last summer, or more probably that certain bacteriological factors were present leading to a greater tendency to inflammatory conditions in connection

with the central nervous system. At the time I wondered if these cases could have any relation to the outbreaks of supposed cerebro-spinal meningitis reported from some parts of the country.

For the first time, as far as I can ascertain, in the history of the town, a death has been certified as due to or accelerated by vaccination. That this should be the only case on record shows most strikingly how erroneous are the views held by some as to the danger of this very valuable protective inoculation. Some persons speak as if the occurrence were frequent, whilst the fact is that it is so rare that it at once attracts attention. In this instance, the immediate cause of death was convulsions, which did not come on until 10 days after the vaccination, which in all respects followed a normal course. This child also had a predisposition to nervous diseases, and was living in a basement.

#### UNCERTIFIED DEATHS.

There were 31 deaths, the causes of which were uncertified either by the Coroner or by a Registered Medical Practitioner, being 3.83 per cent, of the total deaths. (In 1904, the uncertified deaths were 4.61 per cent. of the total deaths, in 1903, 5.35 ; in 1902, 2.76 per cent., in 1901, 4.25 per cent. ; in 1900, 3.29 per cent.) Nearly all these have been entered under the classification of "Natural Causes," although in some cases the deaths were attributed to such causes as "Convulsions," "Heart Failure," "Apoplexy." Two cases attributed to "Phthisis" have been entered under that heading, as presumably there was some ground for the statement. It is most unsatisfactory to have such a

large proportion of deaths allowed to pass without any proper certification of the cause, and I think it is quite time that legislation was introduced making it compulsory to hold an inquest in every case of uncertified death. The proportion in the rest of England and Wales for 1905 was 1.6 per cent., so that Blackpool continues to show a very high percentage of such cases.

#### DEATHS FROM VIOLENCE.

The number of deaths classified under this heading was 27 for the year 1905, including 6 visitors, as compared with 38 in 1904. The rate is 0.48 per 1,000 of the population, as compared with 0.57 for all England and Wales. These may be classified as thus :—

	Accident.	Suicide.	Homicide.	Total.
Injuries causing Fractures or Contusions .....	1	...	...	1
Burns, Scalds .....	1	...	...	1
Gunshot Wounds .....	...	1	...	1
Murder .....	...	...	1	1
Poison .....	2	1	...	3
Drowning .....	7	1	...	8
Suffocation .....	1	...	...	1
Otherwise .....	11	...	...	11

The number of inquests held during the year by the Coroner was 37. The rate of inquest deaths was 45.7 per 1,000 of deaths, as compared with 68 per 1,000 in all England and Wales.

The following is an analysis of the verdicts :—

Accidental Drowning .....	4
Accidental Injuries.....	12
Accidental Poisoning .....	2
Natural Causes .....	10
Overlain whilst in bed .....	1
Burns or Scalds .....	1
Found Drowned .....	3
Murder .....	1
Suicide—Drowning .....	1
„ —Cut Throat .....	1
„ —Otherwise .....	1

TABLE IX. (Part I.)

Analysis of Causes of Deaths at several Groups of Ages from Different Causes—(1905).

CAUSE OF DEATH.		AGES AND SEXES.														WARDS.							Institutions												
		Resident or Visitor		0 to 1		1 to 5		Total under 5 years		5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 and over	Total		Claremont	Talbot	Bank Hey		Brunswick	Foxhall	Waterloo	Total								
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F									M	F						
I.	SPECIFIC FEBRILE or ZYMOTIC DISEASES .....	R	V	16	19	15	9	31	28	5	6	7	7	5	7	14	3	9	6	6	1	3	1	...	81	61	17	43	4	16	51	11	142	25	
				...	2	2	1	2	3	2	...	2	2	4	2	2	1	1	1	1	1	...	1	1	...	14	11	2	5	2	6	8	2	25	6
II.	PARASITIC DISEASES .....	R	V	3	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	3	...	...	...	...	...	3	...
III.	DIETETIC DISEASES .....	R	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
				...	...	...	...	...	...	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	...	...	...	...	4	1
IV.	CONSTITUTIONAL DISEASES ...	R	V	...	...	2	...	2	...	...	1	1	1	...	3	2	9	5	6	7	14	7	8	2	3	26	45	13	16	...	10	23	9	71	9
				...	...	...	...	...	...	...	...	1	1	...	1	1	...	1	1	2	2	...	2	...	1	3	8	3	2	1	...	2	3	11	2
V.	DEVELOPMENTAL DISEASES ...	R	V	29	13	...	...	29	13	...	...	...	...	...	...	...	...	...	...	...	2	4	10	10	41	27	16	13	2	9	19	9	68	3	
				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	...	1	3	1	...	...	1	1	1	4	...	...
VI.	LOCAL DISEASES .....	R	V	17	21	12	10	29	31	4	5	1	9	12	9	14	10	28	27	31	26	25	42	12	17	156	176	51	92	7	41	106	35	332	24
				3	4	4	1	7	5	...	...	1	3	3	...	4	1	5	3	8	5	14	5	2	3	44	25	17	8	3	8	17	16	69	5
VII.	DEATHS FROM VIOLENCE .....	R	V	1	...	2	1	3	1	1	...	3	1	2	1	2	...	1	1	...	...	1	1	...	3	13	8	3	8	...	4	3	3	21	2
				...	...	...	...	...	...	...	...	...	...	1	...	...	3	1	1	...	...	...	...	...	5	1	...	...	1	...	5	...	6	3	...
VIII.	DEATHS FROM ILL-DEFINED and not SPECIFIED CAUSES	R	V	17	8	2	...	19	8	...	...	...	...	...	...	...	2	2	...	1	2	2	1	...	1	24	15	4	7	...	6	17	5	39	1
				...	...	...	...	...	...	...	1	2	1	...	...	2	1	...	2	1	2	...	...	...	5	9	2	...	...	...	4	6	2	14	...
	Grand Totals .....	R	V	83	61	33	20	116	81	10	12	18	19	21	35	25	45	40	45	43	40	59	25	34	347	333	107	183	13	86	219	72	680	65	
				3	6	6	2	9	8	2	1	5	7	9	2	8	4	9	8	12	9	15	12	3	6	72	57	25	15	7	19	39	24	129	16

TABLE IX. (Part II. RESIDENTS ONLY).

CAUSE OF DEATH.	AGES AND SEX.												WARDS.						Institutions	
	0 to 1	1 to 5	Total under 5 years	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 and over	TOTAL	Claremont	Talbot	Bank Hey	Brunswick	Foxhall	Waterloo		Total
SPECIFIC, FEBRILE, or ZYMOTIC DISEASES.																				
1.—MIASMATIC DISEASES.																				
Smallpox { Vaccinated .....																				
Un-vaccinated .....																				
No statement .....																				
Measles .....	2	2	2	1	1	1	1	1	1	1	1	3	2	2	2	1	1	1	3	6
Scarlet Fever.....	1	2	1	2	1	2	1	1	1	1	1	2	4	2	2	1	2	1	6	6
Typhus .....																				
Whooping Cough .....	2	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	2	2	3	3
Diphtheria, Membranous Croup .....	6	2	6	2	1	1	1	1	1	1	1	7	4	5	1	3	1	1	11	1
Simple continued and Ill-defined Fever .....																				
Enteric or Typhoid Fever .....																				
Tabes Mesenterica .....	4	1	4	1	1	2	1	1	1	1	1	4	2	1	1	1	3	3	6	5
Tubercular Meningitis, Hydrocephalus .....	1	4	5	1	1	1	1	1	1	1	1	4	1	1	1	1	3	1	5	
Phthisis.....				2	1	5	4	3	6	11	3	3	1	1	1	3	3	6	9	
Other forms of Tuberculosis, Scrofula .....		1	2	1	1	1	1	1	1	1	1	3	4	1	1	2	2	2	7	
Other Miasmatic Diseases .....												3	4							
Influenza .....																				
				1	1	1	1	2	2	2	1	7	3	1	5	1	3	10	2	
2.—DIARRHOEAL DISEASES.																				
Simple Cholera .....																				
Diarrhoea, Dysentery .....	9	15	3	12	15							12	15	6	7	1	12	1	27	
3.—MALARIAL DISEASES.																				
Remittent Fever.....																				
Ague .....																				

TABLE IX. (Part II.—Continued).

CAUSE OF DEATH.	AGES AND SEX.										WARDS.										
	O to 1	I to 5	Total under 5 years	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 and ov'r	Total	Claremont	Talbot	Bank Hey	Brims- wick	Foxhall	Waterloo	Total	Institu- t'ns	
4.—ZOOGENOUS DISEASES.																					
Cowpox and Effects of Vaccination																					
Other Diseases, Hydrophobia, Glanders, Splenic Fever	I		I									I	I			I			I		
5.—VENEREAL DISEASES.																					
Syphilis																					
Gonorrhœa, Stricture of Urethra	I		I			I						I	I				I		2		
6.—SEPTIC DISEASES.																					
Erysipelas																					
Pyæmia, Septicæmia											I		I				I		I		
Puerperal Fever																					
II.—PARASITIC DISEASES.																					
Thrush and other Vegetable Parasitic Diseases	3		3									3		3					3		
Worms, Hydatids, and other Animal Parasitic Diseases																					
III.—DIETETIC DISEASES.																					
Want of Breast Milk, Starvation																					
Scurvy																					
Chronic Alcoholism						I	I					I	I	I					2	I	
Delirium Tremens					2							2	2						2	2	

# PART IX. (Part II.—Continued).

63

CAUSE OF DEATH.	AGES AND SEX.												WARDS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	0 to 1		1 to 5		Total under 5 years		5 to 15		15 to 25		25 to 35		35 to 45		45 to 55		55 to 65		65 to 75		75 and over		Total		Institutions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	Waterloo	Foxhall		Brunswick	Bank Hey	Talbot	Claremont																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
IV.—CONSTITUTIONAL DISEASES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Rheumatic Fever, Rheumatism of the heart																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

TABLE IX. (Part II.—Continued).

CAUSE OF DEATH.	AGES AND SEX.											WARDS.						Institu'ts				
	0 to 1	1 to 5	Total under 5 years	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 and ov'r	TOTAL	Claremont	Talbot	Bank Hey	Brunswick	Foxhall		Waterloo	TOTAL		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	1	2	3	4	5	6	7	8
Laryngismus Stridulus (Spasm of Glottis)																						
Disease of Spinal Cord, Paraplegia, Paralysis Agitans								1														
Other Diseases of Nervous System						3				2			3	1	2				1	1	4	
2.—DISEASES OF ORGANS OF SPECIAL SENSE.																			3	1	9	
Of Ear, Eye, Nose				1															1			1
3.—DISEASES OF CIRCULATORY SYSTEM.																						
Pericarditis																						
Acute Endocarditis																						
Valvular Diseases of Heart							1	3	1	4	1	2	2	3	1					1	2	1
Other Diseases of Heart																						
				1	1			2	1	6	5	4	5	7	2	4	21	24	10	14	2	20
Aneurism																						
Embolism, Thrombosis																						
Other Diseases of Blood Vessels																						
4.—DISEASES OF RESPIRATORY ORGANS																						
Laryngitis																						
Croup		2	1	2	1																	
Emphysema, Asthma																						
Bronchitis	1	1	2	1	3	2																
Pneumonia	8	7	3	6	11	13	2															
Pleurisy																						
Other Diseases of Respiratory System																						

TABLE IX. (Part II.—Continued).

CAUSE OF DEATH.	AGES AND SEX.											WARDS.							Institu'ts	
	0 to 1	1 to 5	Total under 5 years	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 and ov'r	TOTAL	Claremont	Talbot	Bank Hey	Brunswick	Foxhall	Waterloo		TOTAL
5.—DISEASES OF DIGESTIVE SYSTEM.																				
Dentition .....																				
Sore Throat, Quinsy .....																				
Disease of Stomach .....																				
Enteritis .....																				
Obstructive Diseases of Intestines .....																				
Hernia.....																				
Peritonitis .....																				
Ascites .....																				
Cirrhosis of Liver .....																				
Jaundice and other Diseases of Liver .....																				
Other Diseases of Digestive System .....																				
6.—DISEASES OF LYMPHATIC SYSTEM																				
Of Lymphatics and Spleen .....																				
7.—DISEASES OF GLANDLIKE ORGANS OF UNCERTAIN USE.																				
Bronchocele, Addison's Disease.....																				
8.—DISEASES OF URINARY SYSTEM.																				
Nephritis .....																				
Bright's Disease, Albuminuria.....																				
Disease of Bladder or of Prostate .....																				
Other Diseases of the Urinary System .....																				

**TABLE IX. (Part II.—Continued.)**

CAUSE OF DEATH.	AGES AND SEX.										WARDS.																			
	0 to 1		1 to 5		5 to 15		15 to 25		25 to 35		35 to 45		45 to 55		55 to 65		65 to 75		75 and over		Total		Claremont	Talbot	Bank Hey	Brunswick	Foxhall	Waterloo	Total	Institutions
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F								
9.—DISEASES OF REPRODUCTIVE SYSTEM																														
(a) <i>Of Organs of Generation.</i>																														
Male Organs .....																														
Female Organs .....																														
(b) <i>Of Parturition.</i>																														
Abortion, Miscarriage .....																														
Puerperal Convulsions .....																														
Placenta Prævia, Flooding .....																														
Other Accidents of Childbirth .....																														
10.—DISEASES OF BONES AND JOINTS.																														
Caries, Necrosis.....																														
Arthritis, Osteitis, Periostitis.....																														
Other Diseases of Bones and Joints .....																														
11.—DISEASES OF INTEGUMENTARY SYSTEM.																														
Carbuncle, Phlegmon .....																														
Other Diseases of Integumentary System .....																														
VII.—DEATHS FROM VIOLENCE																														
I.—ACCIDENT OR NEGLIGENCE.																														
Fractures and Contusions.....																														
Gunshot Wounds .....																														
Cut, Stab .....																														
Burns, Scalds .....																														

TABLE IX. (Part II.—Continued.)

CAUSE OF DEATH	AGES AND SEX.													WARDS.					Institutions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	0 to 1		1 to 5		Total under 5 years		5 to 15		15 to 25		25 to 35		35 to 45		45 to 55		55 to 65			65 to 75		75 and over		Total	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M

TABLE IX. (Part III. VISITORS ONLY.)

CAUSE OF DEATH.	AGES AND SEX.														WARDS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0 to 1		1 to 5		5 to 15		15 to 25		25 to 35		35 to 45		45 to 55		55 to 65		65 to 75		75 and over		TOTAL	Claremont	Talbot	Bank Hey	Brunswick	Foxhall	Waterloo	Total	Institutions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Scarlet Fever .....																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

TABLE IX. (Part III. VISITORS ONLY—Continued.)

CAUSE OF DEATH.	AGES AND SEX.												WARDS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	0 to 1		1 to 5		Total under 5 years		5 to 15		15 to 25		25 to 35		35 to 45		45 to 55		55 to 65		65 to 75		75 and over		TOTAL		Claremont	Talbot	Bank Hey	Brunswick	Foxhall	Waterloo	TOTAL	Institu'tns																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F									1	2	3	4	5	6	7	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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TABLE IX. (Part III. VISITORS ONLY—Continued.)

CAUSE OF DEATH.	AGES AND SEX.										WARDS.										
	0 to 1	1 to 5	Total under 5 years	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 and over	Total	Claremont	Talbot	Bank Hey	Brunswick	Foxhall	Waterloo	Total	Institu'ts	
	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	F	1	2	3	4	5	6	7	8	
5.—DISEASES OF URINARY SYSTEM.	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	F	1	2	3	4	5	6	7	8	
Nephritis .....												M	1	1	1	1	1	1	2	1	
6.—DISEASES OF REPRODUCTIVE SYSTEM (a) Of Parturition.																					
Other Accidents of Childbirth .....				1								1	1	1	1	1	1	1	1	1	
VII.—DEATHS FROM VIOLENCE.																					
1.—ACCIDENT OR NEGLIGENCE.																					
Poison.....									1			1	1	1	1	1	1	1	1	1	
Drowning .....					1		1	1				2	1	1	1	1	1	1	2	1	
Otherwise .....							1	1				1	1	1	1	1	2	2	2	1	
2.—SUICIDE.																					
Poison .....							1					1	1	1	1	1	1	1	1	1	
VIII —DEATHS from ILL-DEFINED and not SPECIFIED CAUSES																					
Debility, Atrophy, Inanition .....																		1	1	1	
Natural Causes .....				1	2		2	1	2	2		5	2	2	2	4	5	2	13	1	
Totals .....	3	6	2	9	8	2	1	5	7	9	2	8	4	9	8	12	9	15	25	57	16

## PART II.—INFECTIOUS DISEASES.



### NOTIFICATION OF INFECTIOUS DISEASE.

Notification of infectious disease had been enforced in the Borough under Section 75 of the Blackpool Improvement Act, 1879, under which small-pox, infectious cholera, measles, diphtheria, typhus, typhoid, scarlet, relapsing, and puerperal fever, were notifiable diseases. This section was repealed by the Infectious Disease (Notification) Extension Act, 1899, which came into operation on January 1st, 1900, and measles was added as a notifiable disease. Chicken-pox was added temporarily in May, 1903, and the term extended in 1904. Attention is again called to the fact that the occupier of a building in which a case of one of the notifiable diseases occurs is liable to the infliction of penalties if he does not forthwith notify the existence thereof to the Medical Officer of Health, and that he will not escape from the attendant troubles by purposely not calling in a medical man.

During the year 1905 there were reported altogether 1,373 cases of infectious disease, compared with 1,842 last year, but excluding measles (which is not notifiable in many towns) and chicken-pox, we have only 323 cases as compared with 305 last year. Typhoid fever and Scarlet fever cases were both larger in number than in 1904. There was again a large number of measles cases, 871 in all, and 27 cases notified as German measles.

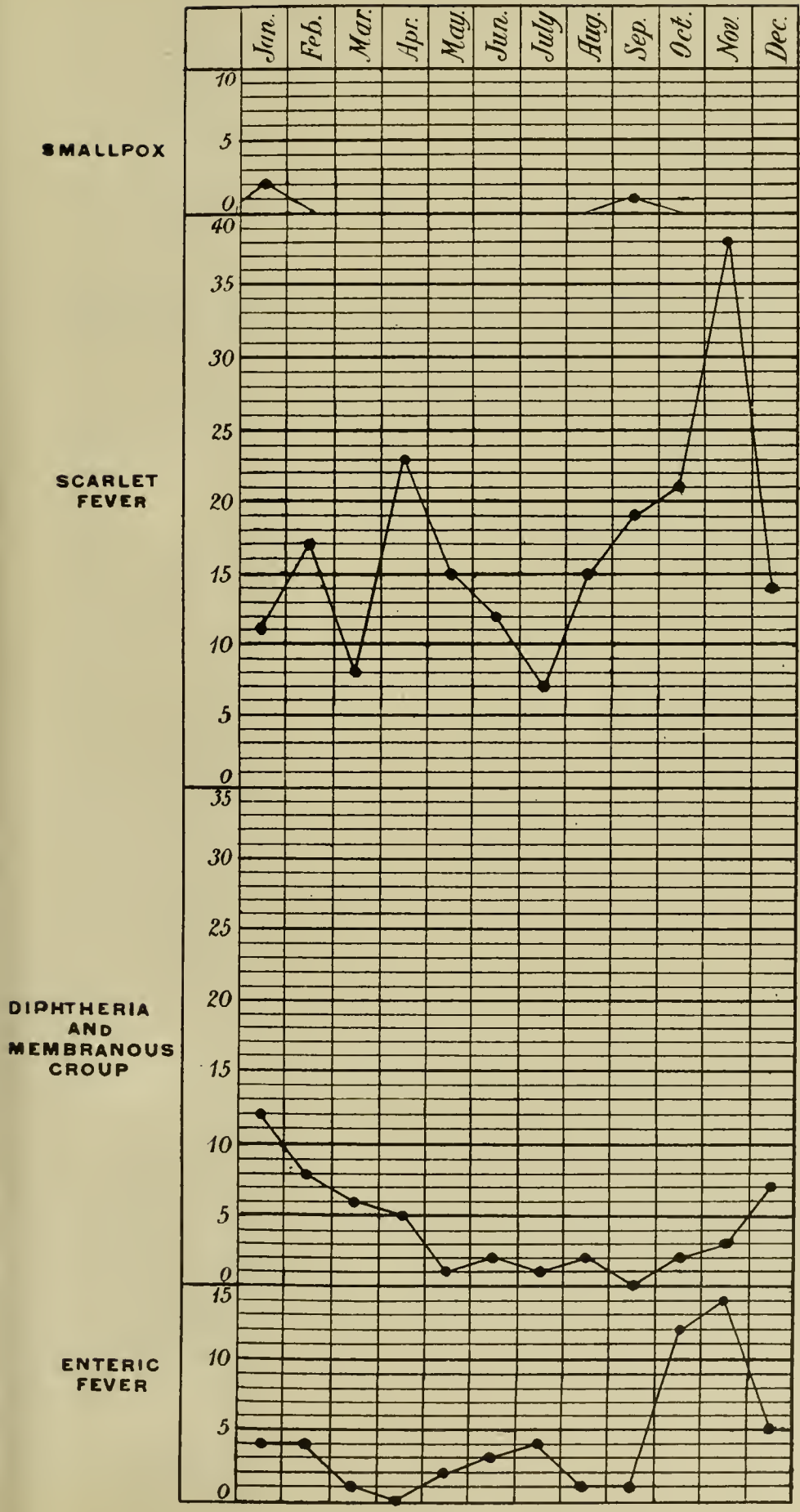
The incidence of four of the most important infectious diseases for the various months in the year is shown graphically in Chart IV. The Enteric fever curve shows very well the rapid and marked rise after the low level of the first 9 months of the year to 12 and 14 cases in October and November respectively. The Scarlet Fever curve shows marked variations which are further commented on under the heading of that disease. The maximum for Diphtheria is not in March as in the two previous years, but in January, there being a gradual fall to one case only in May.

The following Table XV. also shows the variation in the months.

**TABLE XV.**  
(Cases of Infectious Disease notified).

DISEASE.	January	February	March	April	May	June	July	August	September	October	November	December	TOTAL
Small Pox .....	2	...	...	...	...	...	...	...	1	...	...	...	3
Measles .....	93	111	164	101	142	72	14	10	6	6	63	89	871
Rötheln.....	...	...	4	2	17	...	1	1	...	1	...	1	27
Scarlet Fever....	11	17	8	23	15	12	7	15	19	21	38	14	200
Diphtheria .....	12	7	6	5	1	2	1	2	...	2	3	7	48
Enteric Fever....	4	4	1	...	2	3	4	1	1	12	14	5	51
Puerperal Fever.	...	1	...	...	...	1	...	...	...	1	...	...	3
Erysipelas.....	3	...	2	3	...	...	3	1	1	2	1	1	17
Membranous Croup .....	...	1	...	...	...	...	...	...	...	...	...	...	1
Chicken Pox ....	10	12	16	6	20	24	18	9	1	8	12	16	152
TOTALS .....	135	153	201	140	197	114	48	39	29	53	131	133	1373

CHART IV (Infectious Diseases, 1905 .





In Table XIII. in the Appendix will be found a classification showing the ages of the persons attacked, and the number in the various Wards, as also the number of cases removed to Hospital from each locality.

The next Table shows the number of houses infected with the different diseases for each month of the year :—

**TABLE XVI.**

DISEASE.	January	February	March	April	May	June	July	August	September	October	November	December	TOTALS
Small Pox .....	1	...	...	...	...	...	...	...	1	...	...	...	2
Measles .....	62	79	113	68	91	53	11	8	4	6	40	66	601
Rötheln.....	...	...	4	2	10	...	1	1	...	1	...	1	20
Scarlet Fever....	8	15	7	18	8	8	5	9	14	17	31	11	151
Diphtheria .....	12	6	5	5	1	2	1	2	...	2	3	7	46
Enteric Fever ...	4	...	1	...	2	3	4	1	1	12	10	5	43
Puerperal Fever.	...	1	...	...	...	1	...	...	...	1	...	...	3
Erysipelas.....	3	...	2	3	...	...	3	1	1	2	1	1	17
Membranous Croup ...	...	1	...	...	...	...	...	...	...	...	...	...	1
Chicken pox ....	6	11	10	4	16	16	11	6	1	4	10	10	105
TOTALS.....	96	113	142	100	128	83	36	28	22	45	95	101	989

The following Table gives the number of infectious cases notified as compared with the previous year, the deaths from these diseases, the percentage case-mortality, and the death-rate for each disease per 1,000 inhabitants, as compared with the similar rates for the 76 great towns in 1905 :—

TABLE XVII.

DISEASE.	Cases Notified		Cases Notified per 1,000 inhabitants	Deaths in 1905	D R. per 100 cases.	D.R. per 1,000 inhabitants	D.R. per 1,000 inhabitants for 76 great towns
	1905	1904					
Small Pox .....	3	8	0.05	...	...	...	0.00
Rötheln.....	27	13	0.48	...	...	...	...
Measles .....	871	1,386	15.63	3	0.34	0.05	0.39
Scarlet Fever....	200	179	3.59	8	4.00	0.14	0.13
Diphtheria .....	48	43	0.86	11	22.45	0.197	0.16
Membranous Croup ...	1	3	0.02	...			
Enteric Fever ...	51	28	0.92	10	19.61	0.18	0.08
Typhus Fever .	...	...	...	...	...	...	...
Puerperal Fever	3	5	0.05	...	...	...	...
Erysipelas.....	17	26	0.31	1	5.88	0.02	...
Whooping Cough	...	...	...	3	...	0.05	0.29
Diarrhœa .....	...	...	...	30	...	0.54	0.83
Chicken-pox ....	152	151	2.73	...	...	...	...

The cost of notification fees to medical men has been as follows :—

	£	s.	d.
Measles .....	82	2	0
Scarlet Fever .....	23	17	6
Diphtheria .....	6	2	6
Enteric Fever .....	6	2	6
Erysipelas .....	2	5	0
Puerperal Fever .....	0	7	6
Membranous Croup .....	0	2	6
Small-pox .....	0	7	6
Chicken-pox .....	10	12	6

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### SMALL-POX.

Although we were not fortunate enough to escape this disease altogether in 1905, there was less cause for anxiety in connection with it than in any year since the commencement of the London epidemic 5 years ago.

There were only two introductions of the disease, one in January, and one in September, but on the first occasion we had two persons affected, making three cases in all.

The first case was in a girl of  $2\frac{1}{2}$  years of age, who had never been vaccinated, and who suffered from a fairly severe attack.

We were not able to discover at all definitely the source of infection. Probably we did not receive all the information which her parents might have given. Circumstances at the time and afterwards tended to throw considerable doubt on what they did tell us.

So far as the evidence went, the likely source of infection was a public-house to which the patient was taken on New Year's Day (precisely 14 days before the rash).

The little girl was said to have been nursed by several men present at the time, and it is conjectured that there may have been some source of infection, perhaps clothes, which gave rise to the disease in the patient. If so it tends to prove what a slight contact may be sufficient to infect an unvaccinated child without causing danger to others who probably must have been exposed to much longer and stronger infection. The child was removed to Elswick, and the house disinfected. Those in the house were re-vaccinated, but

another inmate had left the house, as we were told, three days before the onset in the case, and we could not get hold of him until three days after the re-vaccination of the others, and more than a week after the onset of the first case.

Although we were aware that this was too long an interval to ensure his escaping the disease if he had received infection this man was re-vaccinated, but unfortunately he developed small-pox, although in a very mild form, and if the history could be relied upon, the rash was considerably delayed. According to the statements made, the first onset of symptoms occurred 14 days after the last contact with the other case, but the rash came out 20 days after the last contact. It is possible, however, that letters may have gone to this man from the house in Blackpool at a later date than the last known contact. The other supposition is that the late re-vaccination, whilst not preventing the disease entirely, delayed its manifestation, and this is to some extent borne out by a similar case which came under my notice in 1903.

The only other instance of small-pox reported during 1905, was in a visitor from Liverpool, who developed the disease in September in a fairly large boarding-house.

The patient commenced with the rash about seven days after arriving in Blackpool. As there were no known cases in Liverpool at the time, we came to the conclusion that it may have been contracted from some fellow passenger on the steamer between Liverpool and Llandudno, as both on the 15th and on the 12th days before the rash the patient had taken this trip.

The patient had been vaccinated at birth, and there

was some doubt whether she had been re-vaccinated 2 or 3 years ago, but if so, there were no marks of such re-vaccination to be seen. The case was fairly mild in nature although the rash was very extensive, and left a fair amount of pitting.

As there were a large number of visitors and others in the boarding-house at the time this case caused a considerable amount of trouble. The visitors came from a large number of different places, and as some had left after the onset of disease, but before its discovery, we had a considerable amount of correspondence to undertake on the matter.

The inmates of the house were re-vaccinated, and thorough disinfection carried out with the satisfactory result that no further case developed.

The three cases were treated at Elswick ; all recovered, so that our mortality was *nil*.

### **CHICKEN-POX.**

In March, 1903, owing to the spread of small-pox in various parts of the country, and in order that any suspicious case might come under the notice of the Health Department, the Sanitary Committee resolved to have Chicken-pox included among the compulsorily notifiable diseases. This resolution was ratified by the Council, and came into force in May. From that time, up to the end of the year, 120 cases were notified.

In 1904, owing to the continued existence of small-pox in various districts of Lancashire and Yorkshire, it was resolved to continue the notification of chicken-pox for another year.

On the expiry of this second period of 12 months, about the middle of 1905, the Sanitary Committee decided, in view of the great reduction in the prevalence of small-pox in the country, that it was not necessary to continue the compulsory notification of chicken-pox.

During 1905, however, 152 cases of this disease were either notified by medical men or came to my knowledge from other sources ; just one more than the number observed in 1904. Four of these were afterwards declared to be cases of scabies, leaving therefore 148.

Of these 148 cases, 71 were in children under the age of five years ; 51 others were at ages 5 to 7 years ; only 9 were in persons above the age of 10 years, but two of these were in adults, one 18 years of age, the other 40 years of age. Through the courtesy of the medical man attending I had the opportunity of seeing this case, which was a typical one of varicella.

A large number of cases were extension cases ; in several instances 3 or 4 members of a household being attacked ; the 152 cases only involved 105 houses.

No fewer than 18 cases were in children under 12 months old.

In most cases the infection could be traced to schools but in 7 cases at least there was no doubt that the infection was " imported " from other districts. There were no cases that gave rise to any serious difficulty in diagnosis.

An unfortunate occurrence in connection with chicken-pox during 1905, was its introduction into the Scarlet Fever wards at the Sanatorium.

A boy was admitted on March 29th, with a definite attack of Scarlet Fever, and the chicken-pox rash appeared on April 6th, so that he must have been exposed to the infection of this disease a week or more before admission to Hospital.

No fewer than seven other cases developed in children who had been in the same ward, and one of these infected another child, so that we had nine cases in all, and considered ourselves fortunate in that it did not spread further. A few interesting points were observed. First, in cases suffering from a severe form of Scarlet Fever the disease assumed a much severer type than usual, the vesicles being much larger, taking longer to disappear and showing much more tendency than usual to become pustular. This was especially noticeable in one boy in whom some of the spots became as large as sixpences, and ulcerated, leaving definite scars. In this case there was considerable febrile disturbance also.

*Secondly :* The incubation period was longer than is sometimes stated to be the case. From the date of last contact to the date of appearance of the rash there was in every case an interval of at least 16 days. In most it was exactly 16 days, but in two cases it was 17 days.

*Thirdly :* The disease was infectious before the appearance of the rash. In five of the extension cases, the last contact had occurred two days before the appearance of the rash in the first child. In 2 cases the last date of contact was the same day as the rash, and in one case the precise date of last contact was not ascertainable.

*Fourthly :* Some children who had been in contact with the first case, and were known to have had chicken-pox

previously, escaped infection. All those who were infected had been vaccinated, whilst two unvaccinated children, who happened to be in Hospital, escaped. This only confirms the well-known fact that vaccination, although protecting against small-pox, does not protect against chicken-pox.

### MEASLES.

Considering the large number of cases in 1904, it was rather surprising to find so many as 871 cases reported in 1905. This probably means that the measures taken in 1904 to cut short the outbreaks were successful to a certain extent, but that they left a larger number of susceptible children than would have been the case otherwise, and some of these being exposed to infection in 1905, failed with the disease.

As I stated last year the gathering together of so many children in the very large schools, which seem to be the rule now, gives every opportunity for measles epidemics to occur on a large scale. That this is particularly so with measles more than with other diseases is due to the fact that the infection of measles is perhaps most intense on the 2 or 3 days immediately *before* the appearance of the rash. The child attends school apparently well, or with but a cold in the head, and I have known one such child infect as many as 14 others, who all developed measles a fortnight later. Of course, another crop of cases is due in another fortnight, so that the spread is very rapid. Then, owing to children in a family attending different schools, another school gets infected, and so the disease spreads over the town.

The remarks I made in my last Report in regard to the attendance at school of children under 5 or 6 years of age, attracted considerable attention, and have been emphasised by the action recently taken by the Board of Education, which has specially drawn the attention of Education Committees to this matter. Recognising that it is a question which may be answered differently in different places, they have left the matter to the judgment of the local authorities.

I must repeat my opinion that from the educational point of view early attendance of children does not make for efficiency, but is apt to increase that tendency to want of originality, and to automatic habits of mind, which are adverse to real education.

From a physical standpoint I think that too early concentration of eyes and hands and mind and will are apt to do harm rather than good, unless the lessons are really play from the child's point of view as well as the teacher's. I am inclined to think that the increasing prevalence of eye-strain is partly due to the early age at which it is endeavoured to train children to use their hands and eyes in purposive movements, when the brain centres are scarcely sufficiently developed to allow such to be carried out without undue fatigue.

Again, with all respects to the opinions expressed by some, I believe that many of these children would be better physically for playing in the open-air, even of the streets, than cooped up for considerable intervals with a large number of others, no matter how successful the ventilation. And my experience even of modern schools leads me to think that the ventilation is often more efficient in theory than in practice.

If mothers have to go out to work (as is the case in many Lancashire towns), nursery schools for small numbers only, or crèches should be supplied, and the teaching there should be only of the simplest kind, free from any formality or excessive discipline, and from any likelihood of overstraining the undeveloped brains of the children.

I also consider it highly desirable that infants' departments of schools should be housed in entirely separate buildings, so that any epidemic commencing there would be less likely to spread to the elder scholars.

Commencing with 93 cases in January, there were 111 in February, and 164 in March. The cases diminished to 101 in April, but rose to 142 in May, falling to 72 in June, and 14 in July. In November, after keeping low during the summer, there was a rise to 63, with 89 cases in December.

Although 871 cases were notified only 601 houses were affected, the disease frequently extending to 3, 4, or 5 members of a family. In several instances these extension cases were in children who had already had measles once before.

Twenty-five cases during the year were definitely imported from other places, and of these 15 occurred during June, July, and August, the very months when our own cases had begun to diminish. It is quite possible that the outbreak in the latter part of the year may have had some connection with these imported cases.

Practically all the schools were affected at various times during the year, and usually there were cases at several schools at the same time, so that it was not a matter of an outbreak affecting one school at a time, and then extending to another.

It was necessary to resort to closure of schools on four occasions as tabulated below, and in three out of these measles was the infectious disease which rendered such a procedure necessary. In one case a little outbreak of whooping cough made closure necessary. Only the infants' departments were closed in each case.

#### CLOSURE OF SCHOOLS, 1905.

School.	Cause	CLOSED	
		From	To
Revoe Council School (Infants' Department) .....	Whooping Cough	May 22nd .....	June 10th
Victoria School (Infants' Department) .....	Measles	November 15th	November 27th
Talbot Road R.C. School (Infants' Department) .....	do.	November 15th	November 27th
Adelaide Street Wesleyan School (Infants' Department) .....	do.	December 8th	December 22nd

The wards chiefly affected were Foxhall, with 245 cases ; Talbot, with 226 ; and Brunswick, with 156.

Out of the 871 cases only 3 deaths occurred, so that the case mortality was only 0.34 per cent., and the death-rate per 1,000 inhabitants was only 0.05, as compared with 0.32 for England and Wales.

Rate of mortality from Measles for the last 5 years :—

YEARS.	1891 to 1895	1896 to 1900	1901	1902	1903	1904	1905			
							England & Wales.	76 Great Towns.	141 Smaller Towns.	Black- pool
Death rate per 1,000	0.17	0.22	0.08	0.23	0.09	0.20	0.32	0.39	0.31	0.05

Only 5 cases of Measles (including one case of German Measles), were treated in the Sanatorium during the year. All recovered.

We found it necessary to make an example in one case by taking legal proceedings against a man who wilfully exposed himself in the street whilst suffering from measles, although he had been fully warned. He was summoned under Section 126 of the Public Health Act, 1875, and fined 5/- and costs.

### SCARLET FEVER.

During 1905, 200 cases of Scarlet Fever were notified, as compared with 179 in 1904, 257 in 1903, 197 in 1902, and 271 in 1901, so that the prevalence was rather less than the average for the previous five years.

Of the 200 cases only 8 died, giving a case-mortality of 4.00 per cent., and a death-rate of 0.14 per 1,000 inhabitants, which, although not so low as last year, was below the average of previous years.

Rates of mortality for Scarlet Fever for the last five years :—

YEARS.	1891 to 1895	1896 to 1900	1901	1902	1903	1904	1905			
							England & Wales	76 Great Towns	141 Smaller Towns	Black- pool
Death rate per 1,000	0.23	0.15	0.30	0.134	0.17	0.09	0.11	0.13	0.11	0.14

Chart IV. shows in a graphic manner the distribution of the disease during the year.

Commencing with eleven cases in January, there was a rise to 17 in February, probably due to some cases which were overlooked, and kept at home until peeling was discovered. March had 8 cases, but in April there was a rise to 23, mostly in the south and central districts of the town, and although some of these cases were probably due to "imported" cases, in others infection was probably caused through a case kept at home in a house connected with a shop selling articles of food. This case was only discovered peeling on the occurrence of illness in another child in the same house four weeks later. May, June, and July showed a progressive diminution in number of cases from 15 to 7. August had 15, September 19, October 21. There was some reason to suspect infection imported from Blackburn in some of these cases, as several of them occurred in houses where visitors from that town had stayed during the Blackburn holidays. November had the largest number of cases—38, and they were scattered over different parts of the town. In December they fell to 14.

The 200 cases occurred in 151 different houses, frequently two, three, or more children being attacked. This was especially so when the first case had been overlooked, and had remained at home, and shows how valuable the Isolation Hospital is in limiting the spread of this disease.

As regards Wards, Foxhall had the largest number of cases, namely, 74; Talbot came next with 52; then Claremont with 32, Brunswick with 26, and Waterloo with 15, whilst Bank Hey had only one.

The source of infection in some of the cases was often very difficult to trace at the time, although frequently some

light was thrown on the subject by the discovery of peeling cases later on. No fewer than 14 cases were discovered in the desquamation stage, and there was abundant evidence that they had materially helped to spread the disease.

In all the cases the parents denied any knowledge of what was the matter with the child, although the association of peeling with Scarlet Fever must be very well known to most people.

Thirteen cases were pretty clearly instances of persons contracting the disease elsewhere, and coming to Blackpool in the early stages of the disease, or developing it immediately on arrival. Two other cases in residents were probably infected outside Blackpool.

In a considerable number of cases, particularly in poor districts, the spread seemed to be by locality infection, due probably to children playing together in the streets, or running in and out of each others houses. Very often in these districts when a child is ill in one house all the mothers in the locality come to advise, condole, or assist, even when the infectious nature of the case is suspected, and as the sick child is generally in the living room of the house—the kitchen—there is ample opportunity for the conveyance of infection from house to house.

The schools have, as usual, been implicated in the spread of the disease, but there has not been any extensive outbreak particularly associated with one school. During certain months some schools have been more affected than others, but frequently when there were several cases at once from one school, they have been members of the same family.

At St. Cuthbert's School, in December, a little girl was sick in school one day and commenced with a scarlet fever rash the next day. Several other cases from the same school developed within the next week. This case was probably the source of another connected with the same school, which was knowingly kept concealed by the parents, and only came to my knowledge ten weeks afterwards, when practically all signs of Scarlet Fever had disappeared. Meanwhile, the child had returned to St. Cuthbert's School, and her infected clothing was probably the cause of the outbreak of the disease in another child from the same class in February, 1906. This case illustrates the importance of teachers doing all in their power to assist the Health Authorities. It also shows that it does not do to rely upon the statements of parents as to illness without a doctor's certificate. In this case the father had told the teacher his child had pneumonia. No school attendance officer therefore was sent, nor was I informed of the absence of the child, and it was only through information from another source that we were apprised of the occurrence, and were able to disinfect the house and school.

Another case, emphasising the necessity for teachers to notice and report as to absence owing to apparently slight illness, occurred in December. The child was away ill for a week with rash and other symptoms, then returned to school and infected two or three others, and it was our enquiries into the source of infection in these later cases which led to the recognition of the infectious character of the disease in the first case.

I am sure a great deal of sickness might be saved if school teachers would keep a careful watch on their scholars,

and exclude from school any child showing signs of illness, until a medical examination has negated the possibility of infectious disease.

I am also more and more convinced that it is highly desirable that the Medical Officer of Health should be in closer relation with the Education Authority.

In many towns the Medical Officer of Health has been definitely appointed Medical Officer to the Education Committee and I do not see why the same course should not be adopted in Blackpool. I think the result could not fail to be beneficial, both as regards educational efficiency and also the Public Health.

One striking feature during 1905, was the comparatively large proportion of adults who suffered from Scarlet Fever, one tenth of the cases being in persons over 16 years of age.

The oldest patient was a man of 60 years of age, with a very marked attack, and curiously enough, he was admitted to the Sanatorium on the very same day as the youngest patient we have had there, a child of 5 weeks old.

I regret to say that two of our probationer nurses and one of the servants at the Sanatorium contracted Scarlet Fever during the year.

The possibility of "return" cases has been steadily kept in mind during the year, and careful enquiries made and I am glad to report that in only four cases did there seem any possibility of this origin, and other sources were, in some of the cases, quite as probable.

Of the 200 cases of Scarlet Fever notified 192 were removed to the Infectious Diseases Hospital (96 %), which

is the largest proportion ever recorded. This is very satisfactory, as showing that the ratepayers appreciate the care and attention shown to the children in the Hospital. Many persons have expressed in warm language, both verbally and by letter, their satisfaction with the administration of the hospital, and gratitude for benefits received by their relatives under treatment there. Hospital isolation is a great advantage from the public health point of view, as there is no doubt that home isolation is in many cases absolutely futile. In many houses it is absolutely impossible, and even in more favourable cases, beginning with the best intentions, the residents of the house grow careless before the long period of isolation is over. Again, for the sake of the patients, it is much better for the children to go to the Sanatorium, where they can get open-air exercise than to be cooped up for six weeks in a single room at home.

With the completion of the new extensions I hope we shall be able to do even more than in the past for Scarlet Fever cases. We shall have less risk from over-crowding, the new playroom will be a great advantage, and we shall be able to keep our infective cases better separated from the non-suppurating cases, and with the larger accommodation we shall be able to allow the fullest amount of air-space which is considered desirable in the treatment of this disease.

### **DIPHTHERIA.**

During 1905, 48 cases were notified as suffering from Diphtheria, and one as Membranous Croup, making a total of 49, six more than in 1904, and 9 more than in 1903, but still far below the high figures of 1901 and 1902. Twelve

cases were reported in January, eight in February, 7 in December, 6 in March, 5 in April, 3 in November, 2 each in June, August, and October, 1 each in May and July, and none in September.

Chart IV. shows by the graphic method the fluctuation during the months. March does not show the same excess of cases as in the three preceding years, when the maximum number of cases occurred in that month of east winds.

Of the 49 cases, 11 died, giving a case mortality of 22.45 per cent., as against 30.43 in 1904. The death-rate per 1,000 of the entire population was 0.197, as compared with 0.26 in 1904. This rate is slightly higher than the average for England and Wales.

#### Rate of Mortality for Diphtheria for the last five years.

YEARS.	1891 to 1895	1896 to 1900	1901	1902	1903	1904	1905			
							England & Wales	76 Great Towns	141 Smaller Towns	Black- pool
Death rate per 1,000	0.11	0.08	0.65	0.34	0.13	0.26	0.16	0.16	0.15	0.197

In regard to this mysterious disease, our knowledge of the factors concerned in its sudden appearances is far from complete, and we can only at present tabulate facts observed, without venturing to draw very definite conclusions.

In various periods of the year the cases occurring were fairly definitely localised to comparatively small areas, yet it was exceedingly difficult in many cases to get any clear history of direct contact, although it was strongly

suspected in several instances. One was driven, therefore, to the conclusion that often apparently healthy persons must have acted as carriers of the disease germs from one patient to another. It is well recognised that in diphtheria, as in other bacterial diseases, the specific germ is only one of the factors leading to the clinical picture which we term diphtheria, and that other causes such as depressed vitality, exposure to cold and wet, or to foul air from drains or other nuisances may lead to the germ multiplying, and thus bring about the disease. It is well known, too, that the diphtheria germ may persist for months in the throats of diphtheria patients after apparent recovery, and may be present in persons who have never had any symptoms of the disease.

These indications naturally suggest the great difficulty in dealing with diphtheria, and in preventing its spread. We have continued the practice of insisting on a four weeks' isolation of the diphtheria patient, as that time is little enough to allow for the disappearance of the germ from the throat.

Careful investigation of the cases reveals once more what a remarkably large proportion occur in houses situated on clay soil, no fewer than 43 out of 49, and by far the majority of the cases were north of a line drawn east from Talbot Square. The 49 cases occurred in 47 different houses.

In several instances sanitary defects were found. In 2 cases w.c.'s were found blocked or defective, and in another there was a complaint of a smell from a w.c. in the adjoining house ; the drains were defective in some instances ; water was found under the floor of one house ; in another case there

was an earth-closet, and the drains emptied into a rather foul ditch near the house ; at another place the food was stored in a cellar containing a gully.

The yard surface was in bad condition in 5 cases. In 17 cases the back street was not formed, and in one case the front street also was unformed.

Animals did not seem to be associated with the causation of the disease ; in two cases cats in the house had either sneezing or cough.

In two cases the infection was almost certainly imported.

Six cases were admitted to the Sanatorium during the year—2 in January, 1 in February, 1 in March, 1 in April, and 1 in December.

Now that our Hospital extensions are completed we shall be able to take into Hospital a larger proportion of the cases in which proper isolation is difficult or impossible.

During the year the arrangement with Professor Delépine for examination of specimens taken from the throats of suspected cases of diphtheria was taken advantage of to a very considerable extent. Altogether 85 specimens were sent to Professor Delépine, and the reports stated that diphtheria bacilli were found in 39 cases, and were absent in 41 cases ; in three cases suspicious bacilli were found, and 2 cases showed no growth.

Of the cases notified as Diphtheria or Membranous Croup, either before or after the bacteriological examination, swabs were examined from 43 cases. In 33, diphtheria bacilli were found to be present ; in two others suspicious bacilli were found ; in six they were not found ; in two

cases no growth occurred from the swab. Four patients died before a specimen could be taken, and in 2 other cases no bacteriological examination was made ; in one of these a swab from another member of the same family gave a positive result. Of the six cases which gave a negative reaction some were probably true diphtheria, in other cases there was an element of doubt as to the diagnosis.

The facilities granted by the Council for the free supply of Antitoxin have been taken advantage of to a considerable extent, 82 doses of 2,000 units each having been supplied during the year. I would again repeat my opinion that it is very desirable to use this valuable remedy at as early a stage as possible, and to use it in all doubtful cases without awaiting the result of the bacteriological examination of the throat swab. I also think it would be advisable to administer prophylactic doses of 500 or 1,000 units to all members of a household who have been exposed to infection. I may add that in not a single instance has any untoward result from the injection of antitoxin come under my notice, further than the appearance of an antitoxin rash in a few cases without any other symptoms.

### **ENTERIC FEVER.**

Table XV. gives the number of cases of Typhoid Fever notified in each month of the year. Chart IV. shows the same thing by the graphic method, whilst in Chart III. the cases are placed according to the weeks in which they occurred.

I regret to record a considerable increase in the number of cases. After falling from 70 in 1902 to 42 in 1903, and

28 in 1904, they rose to 51 in 1905. This figure, although considerably below the average for the nine years 1894 to 1902 inclusive, especially if one takes into account the increased population, is disappointingly large.

However, there is one aspect of this increased typhoid incidence which may be profitably considered, as this very increase affords a further and striking corroboration of my opinion that one of the most serious dangers of typhoid infection in Blackpool arises from the sewage-polluted mussels on the piers and on the sewer outfall pipes.

In my last report I referred to the improved conditions as to typhoid fever, and stated that the great expense incurred in removing mussels from the piers was very well justified by the results achieved. I then added :—"Of course it will be necessary to keep a vigilant eye on the fresh crop of mussels now accumulating, and to have these removed before they become a source of danger."

That this danger may arise very rapidly is well exemplified by the events of this year.

The mussels were removed at intervals from the most dangerous position—the sewer-outfall pipes, and occasional visits were paid to the piers, and as late as the middle of August only mussels of small size were observed. But later they must have grown very rapidly, for when a rather sudden outbreak of typhoid fever, towards the end of October attracted my attention, I found there were a considerable number of large mussels among the smaller ones, and I obtained evidence that hawkers had been collecting them from the piers. I immediately arranged to have the large mussels removed, so as to minimise the risk until the Sani-

tary Committee sanctioned the expense of having the main mass cleared off again.

Table XV. and Chart IV. show how very striking was the sudden outburst of Enteric in the autumn, although the history in the earlier cases did not suggest mussels as the cause, one being an imported case, another in a man engaged in sewer work, and so on. Beginning with four cases each in January and February, we had one to four each month until July, then one in August, and one in September. Suddenly October jumped to 12 cases, November to 14; December fell to 5, but this was after we had stripped, as far as practicable, the large mussels from the piers.

I would again repeat my opinion that much more stringent powers should be given to local authorities in dealing with persons selling shell-fish from sources exposed to sewage contamination. I think legislation should be directed to the following points:—(1) The prohibition of the laying down of edible shell-fish in localities liable to sewage pollution; (2) full powers for the punishment of all persons gathering or exposing for sale shell-fish from polluted sources; (3) sanitary authorities and private persons should not be allowed to bring sewer outfalls near any unpolluted layings, fattening grounds, or storage ponds at present in use for shell-fish.

Meanwhile it is evident that it will be necessary to arrange for the periodical removal of mussels from the piers, as they arrive at a size suitable for use as food.

Cockles, although not quite so serious a source of danger, are yet not without considerable risks, and I see no way to

guard against the risks from infected cockles, except careful washing and a sufficiently prolonged cooking.

It is well to remember that danger lies not only in the consumption of such infected shell-fish, but also, and perhaps even more, in omitting to wash the hands before eating and after handling of the raw mussels and cockles.

In several instances patients suffering from typhoid fever had not consumed the shell-fish themselves, but had handled them in preparing the food for other members of the family.

Of the 51 cases 9 died, giving a case-mortality of 17.65 per cent., but if we include the death of a Blackpool resident, who died in another town from typhoid fever, and whose case is not included among those notified here, we have a total of 10 deaths, and these, in relation to the cases notified here, give a case-mortality of 19.6 per cent., and a death-rate of 0.18 per 1,000 on the total population.

This is twice as large as the rate for 1904, but almost the same as in 1903, and considerably lower than the average for the 5 years 1891 to 1895, or the rates for the years 1896 to 1902 inclusive. It is, however, considerably higher than the rates for England and Wales as a whole.

Rate of mortality from Enteric Fever for the last five years:—

YEARS.	1891 to 1895	1896 to 1900	1901	1902	1903	1904	1905			
							England & Wales	76 Great Towns	141 Smaller Towns	Black- pool
Death rate per 1,000	0.22	0.38	0.32	0.27	0.17	0.09	0.09	0.08	0.13	0.18

Thirty-five of the cases reported were treated in Hospital, or 68.62 per cent, as compared with 67.86 per cent. in 1904, and 66.66 the year before.

I referred in my last Report to the time lost in some cases before making a definite diagnosis of typhoid fever, resulting in extension cases, owing to the first patient remaining at home some time instead of being promptly removed to the Hospital. Two very marked instances occurred in 1905. In the first case (No. 2) fourteen days elapsed from the onset to the date of removal to Hospital, and no fewer than 4 subsequent cases were removed from the same house later on : Cases 5, 6, 7, and 8.

Again, case 24 was at home until the 16th day after the onset, and three further cases, Nos. 34, 36, and 37, occurred in the same house.

It is very desirable, and I would strongly urge that, in cases of doubtful illness, or where the temperature remains high for several days without a clear and definite cause, a blood specimen should be taken at once for the Widal re-action, and especially in cases among the poorer classes, the patient should be sent to Hospital to be kept under observation.

It is obvious that the housewife, who in such cases is usually also the nurse, is very likely to omit proper precautions in washing and disinfecting the hands after attending to the patient. The food in the house thus readily becomes infected and extension cases result.

I subjoin an epitome of the 51 cases notified during the year. It is arranged chiefly with the view of throwing light on the causation of the disease.

# Epitome of Cases Notified as Enteric Fever during 1905.

No.	Age.	Sex	OCCUPATION.	STREET.	*Widal's Reaction.	Recovered or dead.	Removed to Hospital.	SANITARY CONDITION OF HOUSE, &c.	REMARKS.
1	21	F	Housework .....	Burlington Road .	+	R	Yes	Defective connection S.P., &c.	Cockles, 14 to 20 days before onset.
2	10	M	School .....	Wood Street .....	+	R	Yes	Back street not formed; drains tight to smoke test.	With companion gathered mussels on foreshore about a fortnight before onset; See cases 5, 6, 7, 8.
3	11	F	School .....	Wilford Street ....	+	R	No	Drains tight to smoke test; stagnant water front and back streets, which are not formed.	Mussels occasionally; last date not known.
4	53	M	Engineer .....	Read's Road .....	+	D	No	Drains leaky, puddle joints	Imported case; <i>relapse</i> .
5	4	F	School .....	Wood Street .....	+	R	Yes	See case 2.	<i>Extension</i> from brother; case 2.
6	8	F	School .....	Wood Street .....	+	R	Yes	See case 2.	<i>Extension</i> from brother; case 2.
7	20	M	Labourer .....	Wood Street .....	+	R	Yes	See case 2.	Lodger in same house as case 2; <i>extension case</i> .
8	31	M	Lampighter ....	Wood Street .....	+	R	Yes	See case 2.	Father of case 2; <i>extension case</i> .
9	10½	M	School .....	Ibbison Street ...	+	R	No	Drains leaky, puddle joints; slop waste pipe broken.	Mussels or cockles once a week; said to be from St. Annes; case convalescent on discovery.
10	7	F	School .....	St. Helier's Road	<i>Nil</i>	R	No	Drains leaky.	Mussels somewhere about time of supposed onset.

## Typhoid Epitome—continued.

No.	Age.	Sex	OCCUPATION.	STREET.	*Widal's Reaction.	Recovered or dead.	Removed to Hospital	SANITARY CONDITION OF HOUSE, &c.	REMARKS
11	18	F	Servant .....	Dickson Road ...	+	R	Yes	Drains leaky; joints, some puddle, some cement.	Mussels about 10 to 14 days before onset.
12	22	M	Carter .....	Bonny Street .....	+	R	Yes	Drains leaky; puddle joints; back to back house.	
13	72	F	Housework .....	Blundell Street ...	—	D	No	Drains satisfactory to smoke test.	Doubtful if a case.
14	25	M	Insurance Agent	Lonsdale Road ...	+	R	Yes	Drains slightly defective.	<i>Imported</i> ; infection from his wife who had typhoid in Oldham before they came here; onset in this case a fortnight before coming to Blackpool.
15	29	M	Shipping Clerk .	Hornby Road .....	+	R	Yes	Drains slightly defective.	<i>Imported</i> ; onset 3 days before arrival.
16	64	M	None .....	Lark Hill Street .	—	R	Yes	Drains slightly defective.	Doubtful case.
17	16	F	Servant .....	Bonny Street .....	+	R	Yes	Drains satisfactory to smoke.	Cockles; crabs about 14 days before onset.
18	13	M	.....	Everton Road ....	+	R	Yes	Drains satisfactory; ventilation shaft leaky.	Had been watching men engaged in dredging sewer in vicinity.
19	47	F	Housework .....	Lytham Road ...	—	R	No.	Drains very defective; puddle joints	Doubtful if true enteric; may have been para-typhoid or coli infection.
20	15	M	None .....	Richmond Road .	—	R	Yes	Drains leaky; puddle joints.	Probably not a case.

Typhoid Epitome—continued.

No.	Age.	Sex	OCCUPATION.	STREET.	*Widal's Reaction.	Recovered or dead.	Removed to Hospital	SANITARY CONDITION OF HOUSE, &c.	REMARKS.
21	5	M	.....	Promenade .....	+	R	Yes	Drains leaky	Ice cream. ?
22	65	F	Housework .....	Regent Terrace ...	+	D	No	Drains leaky; puddle joints.	<i>Imported</i> ; had mixed composition for gardening with her hands; a mix- ture of manure and soil.
23	30	M	Greengrocer .....	East Topping St. .	+	R	Yes	Back Street not formed.	Watercress; rough shrimps.
24	44	M	Drainer .....	Belle Vue Cottages	+	R	Yes	Drains leaky; puddle joints	Watercress; mussels; his work as drainer exposed him to contamina- tion of his hands from sewage; had not washed his hands before dinner.
25	13	M	School .....	Bagot Street .....	<i>nil</i>	R	No.	Drains leaky; puddle joints	No source ascertained; no specimen of blood examined.
26	37	M	Carter .....	Brook Street .....	+	R	Yes	Drains slightly defective.	Raw mussels; frequently.
27	32	M	Barman.....	Promenade .....	+	D	Yes		Mussels purchased in the vaults three weeks before notification.
28	41	F	Housework .....	Havelock Road ...	+	R	Yes	Drains leaky; joints cement and puddle	Cockles some little time before onset; had stayed 10 days just before onset on a farm where well water was used.
29	48	F	Housework .....	Bk. Clarendon Rd.	+	D	Yes	Drains leaky.	

## Typhoid Epitome—continued.

No.	Age.	Sex	OCCUPATION.	STREET.	*Widal's Reaction.	Recovered or dead.	Removed to Hospital	SANITARY CONDITION OF HOUSE, &c.	REMARKS.
30	22	F	.....	Various addresses.	+	R	Yes		Mussels.
31	30	M	Stoker (Rly.) ...	Ibbison Street ...	+	D	Yes	Drains satisfactory to smoke.	Mussels were in house 13 days before onset; patient stated not to have eaten any; he may have handled them; works near Destructor.
32	42	M	Carter .....	Middle Street .....	+	D	Yes	Drains tight to smoke.	Cockles about date of onset; engaged on sewer before onset; no means of washing hands effectually before food
33	44	M	Drainer .....	Wilford Street.....	+	D	Yes	Drains tight to smoke.	Extension from father; case 24.
34	9	M	School .....	Belle Vue Cottages	+	R	Yes	See case 24.	Mussels about once a week.
35	3	M	.....	Queen's Road .....	+	R	No	Premises and yard surface in bad condition; drains leaky.	Extension from father; case 24.
36	4	M	School .....	Belle Vue Cottages	Nil	R	Yes	See case 24.	Extension from father; case 24.
37	7	M	School .....	Belle Vue Cottages	Nil	R	Yes	See case 24.	Extension from father; case 24.
38	27	M	Carter .....	New Road.	+	R	No	Back street not formed; drains somewhat defective.	Mussels at least once a week; also cockles often.
39	28	M	Driver .....	Camden Road ...	+	R	Yes	Drains leaky	Mussels.

## Typhoid Epitome—continued.

No.	Age.	Sex	OCCUPATION.	STREET.	*Widal's Reaction.	Recovered or dead.	Removed to Hospital.	SANITARY CONDITION OF HOUSE, &c.	REMARKS.
40	30	F	Housework .....	Upper Braithwaite Street	+	R	No	Back street not formed ; drains leaky ; puddle joints.	Mussels 17th and 13th days before onset.
41	40	M	Stoker .....	Coronation Street	+	R	No	Drains leaky ; puddle joints.	Cockles 14 days before onset.
42	26	F	Housework .....	Eaves Street .....	+	R	No	Drains leaky ; puddle joints.	Mussels about 14 days before onset ; oysters 3 weeks before onset ; watercress often.
43	42	F	Housework .....	Springfield Road...	+	R	No	Back street not formed ; soil pipe joints leaky.	Mussels 10 days before onset. Also cockles ; watercress previously.
44	6½	F	School .....	Rydal Avenue ...	+	R	Yes	Drains leaky ; puddle joints.	Cockles 2 days before first feeling languid, and 9 days before onset of feverishness, &c.
45	15	F	Housework .....	Blundell Street.....	+	R	Yes	Drains leaky ; puddle joints.	Mussels 6 days before onset and possibly previously.
46	7½	F	School .....	Lark Hill Street ...	+	R	Yes	Drains tight to smoke.	Cockles in house about 17 days before onset ; patient said not to have eaten any, but she may have handled them.
47	46	F	Housework .....	Bloomfield Road.	+	R	Yes	Premises in bad condition ; stagnant water near and rubbish accumulations.	Mussels and cockles about time of onset and possibly earlier also.

## Typhoid Epitome—continued.

No.	Age.	Sex	OCCUPATION.	STREET.	*Widal's Reaction.	Recovered or dead.	Removed to Hospital	SANITARY CONDITION OF HOUSE, &c.	REMARKS.
48	25	M	Hotel Porter ...	Albert Street .....	Nil	D	Yes	Slightly defective.	Mussels about 14 days before onset.
49	13	F	School .....	Victoria Avenue .	—	R	No	Drains tight to air.	Probably not a case; Widal reaction twice gave negative results.
50	27	F	Housework .....	Back Rothsay Rd.	+	R	Yes	Drains slightly defective; back to back house; unsatisfactory con- ditions.	Cockles in house frequently, which patient did not eat, but handled them before cooking them for her husband.
51	11	F	School .....	Platt Street .....	+	R	No	Drains defective.	Cockles some time before onset.

\*NOTE.—The Sign + means positive reaction; the — negative reaction.

In no fewer than 28 cases there was a distinct history of eating or handling mussels or cockles, and frequently the evidence was clear that they were taken at a period before onset which would coincide with their being the cause of the disease.

Cockles seem a probable cause in cases 1, 17, 28, 41, 44, 46, 50, whilst mussels were probably responsible in cases 2, 3, 9, 10, 11, 26, 27, 30, 31, 35, 38, 39, 40, 42, 43, 45, 47, 48. Four cases were almost certainly imported :—Cases 4, 14, 15, 22 ; seven were extension cases. In two cases, although shellfish were said to have been taken, the occupation of the men (Nos. 24 and 33), who were engaged on sewerage works, suggests the possibility of infection through eating food with unwashed hands after sewage contamination, whilst sewer air, &c., may have had something to do with case 18.

In six cases there was some reason to doubt the diagnosis. In two instances the Widal reaction was twice negative ; possibly these may have been cases of para-typhoid or of bacillus coli infection.

In several instances watercress had been taken, but usually shellfish also were implicated. One case was attributed to ice cream, but I have no evidence to corroborate this idea. Two cases in one house, Cases 3 and 33, occurred with a nine months interval between the two, but there is little likelihood of there being any connection.

#### WIDAL REACTION.

This method has again proved of great value, particularly in giving certainty in mild obscure cases of disease, presenting few or more of the typical symptoms of enteric fever.

In 46 of the notified cases specimens were taken. In 40 the result was ultimately positive, in 5 negative, and in one, the first specimen was reported doubtful, and the second negative. Two cases gave a negative reaction twice. Altogether 88 specimens of blood were sent to Professor Delépine for bacteriological diagnosis. Of these 40 were reported as giving the typhoid reaction, 43 as not giving the typhoid reaction, 3 an incomplete reaction, and 2 doubtful.

### **ERYSIPELAS.**

Only 17 cases of this disease were notified during 1905, as compared with 26 during 1904, and 19 in 1903.

Of all the zymotic diseases this is the one in which notification is of the least service, as since the practically complete elimination of surgical erysipelas, the rapid and extensive spread of this disease is almost unknown, and it is very rarely that one can get any evidence of direct connection between one case and another, and it is only very occasionally that the nature of the disease seems to present much likelihood of danger of infection from the patient to other persons, even those coming into close contact with him.

Three cases occurred in January, two in March, three in April, three in July, one in August, one in September, two in October, one in November, and one in December.

There was one death—a woman of 70 years of age, who fell downstairs and died 7 days after ; erysipelas of the face having appeared three days after the fall.

Every case occurred in a different house, and there was no evidence of any connection of one case with another.

Even in several cases of somewhat dirty houses with large numbers of inmates no extension cases occurred.

In eight cases there was a history of some scratch, wound, or breach of continuity of the skin surface, which might serve as a point of entrance for the bacterial cause of the disease.

In fourteen instances out of the 17, the face or face and head only were implicated ; in two cases the leg, and in one the breast.

In one case there was a possibility that the infection had occurred before the patient came to Blackpool.

One case was, at the wish of the friends, removed to Hospital, as proper attention could not be given at home.

### **PUERPERAL FEVER.**

Three cases of this disease were reported during 1905, one in February, one in June, and one in October.

Two died, but one of these cases was complicated by " Rheumatic Fever," which had existed some time before the birth of the child. In the other fatal case a dead and decomposing foetus was the origin of the trouble.

In connection with child-birth there were four other deaths during 1905 ; the causes were certified as follows :—  
 " Cardiac cachexia, following parturition ;" " Placenta prævia, post-partum hæmorrhage ;" " Phlegmasia dolens. Cerebral embolism. Hemiplegia "; " Vomiting 14 days, parturition 2 days ; exhaustion."

## MEASURES TO PREVENT THE SPREAD OF INFECTIOUS DISEASE.

### ISOLATION.

During 1905, 192 cases of Scarlet Fever, 35 cases of Enteric Fever, 5 cases of Measles, 6 cases of Diphtheria,

## INFECTIOUS DISEASES HOSPITAL.

### TABLE XVIII.

Patients admitted to the Sanatorium during the year 1905:—

No. of cases notified	DISEASES.	Total admitted.	MALES.		FEMALES		Discharged.	Died.	Remaining in Hospital Dec. 31st	
			Under 12 years	Over 12 years	Under 12 years	Over 12 years			1905	1904
200	Scarlet Fever.....	192	82	14	79	17	174	8	35	75
51	Enteric Fever .....	35	5	18	4	8	28	6	5	4
48	Diphtheria .....	6	2	...	2	2	4	1	1	...
871	Measles { .....	4	1	...	1	2	4	...	...	...
27	Rötheln. { .....	1	...	...	1	...	1	...	...	...
3	Puerperal Fever .....	...	...	...	...	...	...	...	...	...
17	Erysipelas.....	1	...	1	...	...	1	...	...	...
152	Chicken-pox .....	...	...	...	...	...	...	...	...	...
1	Membranous Croup .....	...	...	...	...	...	...	...	...	...
...	Other Diseases .....	2	...	...	...	2	2	...	...	...
...	Scarlet Fever outside Borough	...	...	...	...	...	...	...	...	...
	Totals .....	241	90	33	87	31	214	15	41	29
			TO ELSWICK HOSPITAL.							
3	Small-pox .....	3	...	1	1	1	3	...	...	...
1,373	Totals .....	244	90	34	88	32	217	15	41	29

1 case of Erysipelas, and 2 other diseases, have been removed to the Sanatorium or to the old Sanatorium, a total of 241 cases, as compared with 220 the previous year. (See Table XVIII.) Of Scarlet Fever 96 per cent. of the cases were removed to hospital, as against 91.62 per cent. in 1904; of Enteric Fever 68.62 per cent., as against 67.86 per cent. in 1904.

The Infectious Diseases Hospital has been most useful during the year, and little difficulty has been found in inducing the friends of patients to allow their removal, but it was frequently impossible to find accommodation for certain cases of Diphtheria, Measles, &c., although the friends urgently desired their admission to hospital.

Towards the end of the year the completion of the extensions allowed us to isolate certain cases of Diphtheria, &c., in the new isolation block.

This is probably the most suitable opportunity of placing on record an account of our enlarged Sanatorium. The Sanatorium in New Road, Blackpool, was erected in 1891. (Previous to that time certain cases had been treated in a wooden erection, and in a Ducker ward near the Cemetery, and commonly known as the Old Sanatorium.)

The buildings erected in 1891 were of brick and stone, and comprised a house or administrative block, two ward blocks, a disinfecting and laundry block, and a stable. Later (in 1898) a porter's cottage was erected in the grounds, consisting of two rooms downstairs and two up. The administrative block was extremely small for the purposes of an Infectious Hospital. There was no sitting-room for the nurses, nor for the servants, no separate dispensary,

and owing to the small number of bedrooms two or even three nurses or servants had to sleep in the same room.

The ward-blocks had, nominally, accommodation for 20 beds and 4 cots, allowing the full 2,000 cubic feet of air space for each patient, but on many occasions extra beds had to be introduced, and the wards to some extent were overcrowded owing to the necessity to accommodate the number of patients requiring admission.

The extensions, now completed, provide for considerable additions to the administrative block, a portion having been built in front of the old block. The new administrative block contains a suite of rooms on the ground floor—sitting-room, bedroom, and bath-room—at present in use for the Matron, but designed ultimately for the accommodation of a resident medical officer, if required.

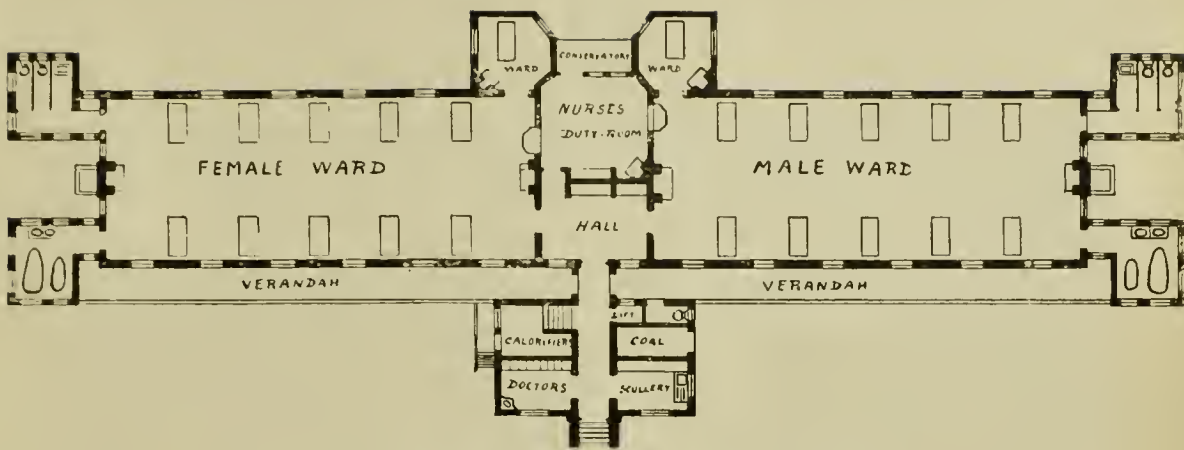
In addition, on the ground floor, is a fair-sized nurses' dining-room, a servants' hall, and a large sitting-room for the nurses, also a dispensary and Matron's office combined. The kitchen is large and well-lighted, and has a granolithic floor, and contains steam cooking apparatus and a gas hot plate, as well as an ordinary closed range. There is a large store-room for groceries and dry goods close to the kitchen, and also two other store-rooms, one for meat and one for milk, &c.

On the two upper floors are 17 bedrooms for servants and nurses, and two bath rooms, and other necessary accommodation, besides linen cupboards. Electric light is laid on to all rooms, and the house is warmed by radiators supplied from a calorifier in a cellar. Another calorifier supplies hot water to various parts of the house.

The main additional accommodation for patients is a large new pavilion, running as do the old blocks, east and west. It has ample accommodation for 22 beds, 10 in each of the large wards, and one in each of two small wards opening out of the large wards.

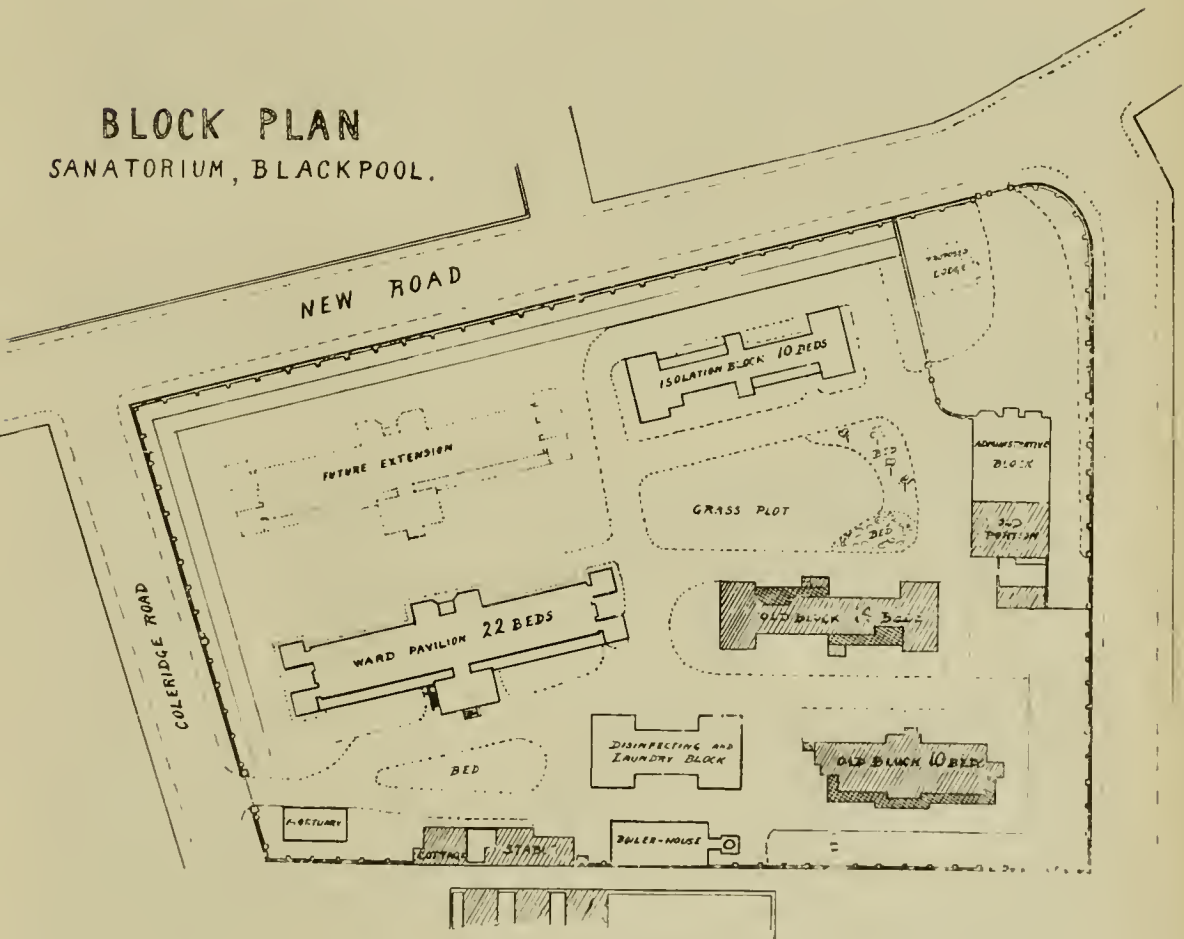
The Nurses' Duty Room is in the centre of the block opening on to the main hall separating the male from the female wards. At the end of each ward are two sanitary annexes, entered from the ward by cross-ventilated passages. One contains two cantilever water-closets and a bed-pan sink, the other contains a 2-basin lavatory range, and 2 baths of Doulton's vitreous enamelled iron. One of these baths, intended for small children, is raised on legs so that the nurses will not have to stoop so much in bathing the children.

Hot water is supplied by a storage calorifier. The wards are heated by radiators under each window. The floors are of narrow teak planks, planed smooth, and finished with Ronuk. The walls are finished in Keene's cement and Ripolin paint. Ventilators open under each bed, and opposite each radiator at the floor level, and the upper part of each window is made to open like a Sheringham ventilator. Shorland's Manchester grates, with chimney breasts of green glazed bricks and with green tiled hearths, are placed at each end of each large ward, and one in each small ward. The wards are lighted by incandescent electric lamps, and wall plugs are so arranged that a hand lamp can be brought over any bed. A glass-roofed verandah runs along the south side of the building, and at the centre is another annex, forming the principal entrance, and containing a scullery, doctor's room, food lift, and the staircase leading to the children's playroom (26ft. by 18ft.), which occupies



PLAN OF PAVILION

BLOCK PLAN  
SANATORIUM, BLACKPOOL.



the centre of the building over the nurses' duty room and the main hall. There are also fair-sized store-rooms on this floor. It is intended to utilise this block for acute Scarlet Fever cases.

The scheme originally put forward includes the building of another block precisely similar in size and arrangements, but the erection of this and of the Discharge Block and Porters' Lodge have been deferred.

The other block for patients consist of a double isolation block, one portion entered from the north side and one from the south.

On each side is a 3-bed ward, 2 single-bed wards, a kitchen, and a lavatory. The lavatory contains w.c., bed-pan sink, hand lavatory basin, and a moveable bath on wheels. The flooring is of teak as before, and the arrangements for lighting, heating, ventilation, &c., are similar to those in the large block.

The old disinfecting and laundry block has been pulled down and a new disinfecting house and laundry combined has been erected.

The disinfecting block is divided into two rooms for infected and disinfected goods respectively by a nine-inch wall, which is pierced by the two steam disinfectors, one an oval Washington Lyons disinfecter, supplied by Messrs. Manlove & Alliott some years ago, and a new large disinfecter of the square type supplied by Messrs. Goddard, Massey, and Warner. Connected with this new machine is a hot-air drying arrangement, which allows the steam to be replaced by hot, dry air, at the end of the disinfection, thus ensuring the dryness of the clothes, &c. Both machines are supplied with steam from the boiler.

The Laundry consists of sorting-room, wash-house, drying-room, ironing-room, and delivery room. In the washhouse is one of Summerscale's washing machines, also a hydro-extractor, a soap-boiler, and a starching trough. The drying-room has the four old drying horses, along with four new ones, and the drying is effected by blowing hot air down through the clothes. The ironing room contains a 72 inch callendar, besides the usual ironing stove. The machinery is run by a 9 horse-power alternating current electro-motor. Near this block, and parallel with it, is the new boiler-house. It contains an old 15-foot Cornish boiler as a stand-by and for use when there is only a small demand, and a new 27 feet by 7 feet Lancashire boiler, built by Messrs. Foster and Sons, of Preston. A new chimney 60 feet high has been erected.

A boiler feed pump is provided, which receives the condensation water returning from the various blocks, and pumps it back into the boiler, thus economising both water and fuel. In order to make the steam pipes more accessible they are laid in brick trenches formed in the grounds, and under the wards they run under the floors, space being left to get at these pipes when desired. In these trenches the main water pipe also runs, and at the side of the trenches the electric lighting cable is also placed.

The cost of the extensions, including furnishings, is expected to be about £16,500. At present there is nominally full accommodation for 54 beds and about 8 cots. When the rest of the scheme is completed, including another large block for 22 beds, and a discharge block and porter's lodge, estimated to cost about £6,500 more, there will be no necessity for further administrative block, or laundry extensions, thus

the total cost of the whole, including land, boundary walls, street making, buildings, &c., will have been about £33,900, for a total of 76 beds and 8 cots, so that the cost per bed would work out at about £424, counting 2 cots equal to one bed.

These extensions will very materially improve the conditions as to hospital treatment of Infectious Diseases. It will enable us to give a much larger air-space for each patient than has usually been possible, the amount in the Scarlet Fever wards having been sometimes seriously below the standard approved by the Local Government Board. I think that this may contribute to a reduction in the proportion of septic cases, and cases acquiring ear and gland complications. The extensions will also enable us to isolate at one time—if necessary—more varieties of disease. It has been a matter of great regret to me, during the past few years, that we have over and over again had to refuse to take in Diphtheria cases, frequently with the result of extension cases occurring. The possibility of isolating doubtful cases for a few days will also be a great gain, and we shall also have the advantage of being able to isolate cases of mixed infection which have often caused much embarrassment in the past. There is no doubt that the increased facilities for isolating various diseases must necessitate at times an increased staff at the hospital, both of nurses and servants, but it may be possible sometimes in cases of special pressure to get over the difficulty by temporary help—especially as regards the servants.

Several changes have taken place in the Nursing Staff during 1905, as 2 of the nurses completed their two two years' training, and fresh probationers had to be engaged I have to refer to the regret we felt on the resignation of

Miss Florence Brown, who had so capably filled the post of Matron for four years. Miss Brown left to take charge of a large Hospital under the Liverpool Corporation.

Miss Procter, who came with excellent credentials from Pontypridd, was appointed to succeed Miss Brown, and although she came at a very trying time with the whole place rather upset with the alterations, and altogether in an uncomfortable condition, she did not allow herself to be daunted by the difficulties.

I have great pleasure in expressing my satisfaction with the Hospital administration all throughout the year. The Matron and the Nurses have carried out their duties with tact and judgment, as well as with zeal and devotion, and I have frequently been gratified with the warm, spontaneous expressions of gratitude from patients and their friends who have realised something of the great care and attention bestowed on the patients by the nursing staff.

It is quite certain that some severe cases owed their recovery largely to the unremitting care of the nurses.

The Old Sanatorium was used 4 times during the year, three times for Measles and once for Erysipelas.

The details of the cost of the Hospital, as nearly as can be ascertained, are appended. In past years it has been customary to give the cost for the financial year ending March 31st, but it is obviously more desirable to give, if possible, the actual cost for the year under review. I have accordingly made arrangements last year which enable me to give the cost of the upkeep of the Hospital for the year beginning January 1st, 1905, and ending December 31st, 1905. It is to be observed that one large item for private

street works, due to the forming of the back street behind the Sanatorium and the road at the easterly end of the grounds, has been included, although it should really be a capital charge. It has been arranged to pay this out of revenue in three annual instalments.

INFECTIOUS DISEASES HOSPITAL.		£
Matron .....		60
Porters, Nurses, and other Salaries .....		380
Provisions for Inmates, Staff, &c. ....		552
Gas, Coal, Water, Rates and Taxes, and Insurance		360
Furniture, Cutlery, Crockery, &c. ....		10
Building Repairs .....		13
Gardening .....		49
Materials for Uniforms .....		29
Medicine and Medical Appliances .....		50
Washing and Cleaning Materials .....		51
Advertising, Printing, and Stationery .....		20
Miscellaneous .....		48
Private Street Works.....		206
		<hr/>
		1,828
Less Receipts from Inmates .....		55
		<hr/>
		1,773
Interest and Sinking Fund .....		967
		<hr/>
		£2,740

#### OLD SANATORIUM.

Rent of Site .....	6
Caretaker .....	5
Gas, Coke, Coal, Rates, and Water .....	15
Repairs and Sundries .....	—
	<hr/>
	£26
	<hr/>

During the year ending December 31st, the average stay in the Hospitals of the 241 patients was 47.4 days.

Not including the interest and sinking fund on the Hospital expenses, the cost per week (per patient) was £1 2s. 8.5d. or £59 os. 10d. per year, as compared with £1 4s. 0.8d. per week for the financial year 1904-5.

Deducting the amount received from patients, and including interest and sinking fund, the actual loss to the ratepayers of each patient averaged £1 13s. 10.6d. per week, as compared with £1 11s. 8.7d. per week in the financial year 1904-5. In this cost, the cost of disinfecting articles sent from houses in the Borough to be disinfected is included.

In Table XIX. I give the number of cases treated at the Hospital since 1891, together with the percentage mortality amongst them, as compared with that amongst patients treated at home during the same period :—

**TABLE XIX.**

(Corresponding to Table XI. in former Reports).

DISEASE.	Cases treated in Hospital.	Deaths	Per cent. of Mortality	Cases treated at Home.	Deaths	Per cent. of Mortality.
Measles .....	323	2	0.62	6,185	102	1.65
Scarlet Fever.....	2,017	69	3.42	361	40	11.08
Enteric Fever .....	472	92	19.49	325	76	23.38
Diphtheria .....	74	18	24.32	378	99	26.19
Typhus Fever .....	1	1	100.00	...	...	...
Other Diseases .....	43	7	16.23	311	4	1.29
Erysipelas .....	5	2	40.00	97	4	4.12

## DISINFECTION.

After cases of the chief notifiable diseases, the houses are fumigated with burning sulphur, or more frequently now by formaldehyde vapour, after washing down the walls and furniture with solution of perchloride of mercury, or spraying the walls with a solution of formaldehyde, the new spraying machines recently purchased giving very good results, and with a smaller expenditure of time. Clothes, bedding, etc., are removed to the Sanatorium and disinfected in the steam disinfectors there; 34,327 articles were so disinfected during 1905.

In the case of Typhoid Fever and Diphtheria the drains are flushed with a solution of chloride of lime, and in case of an outbreak of disease in a particular district, the sewers in the district are flushed with a similar solution.

After cases of Measles, fumigation of the room with formaldehyde or burning sulphur is carried out. After a death from Phthisis, on request, the house is disinfected, and similarly after a death from cancer.

All typhoid excreta, whether the case is treated at the Sanatorium or at home, are collected in special pails and burnt at the destructor.

Disinfectants are distributed on application at the Health Office to the houses where infectious diseases have occurred.

The drains are tested after all cases of enteric fever, diphtheria, and after diarrhœa deaths.

## VACCINATION.

Dr. Butcher has kindly informed me that in the course of his duties as Public Vaccinator for the north section of the town in 1905 he performed 204 primary vaccinations, and 24 re-vaccinations, 228 in all. Dr. Vinter has kindly supplied me with the following figures for the work he has done during 1905 as Public Vaccinator for the southern division of the town:—Primary vaccinations, 320; re-vaccinations, 0. The totals for the whole town for the year are therefore:—Primary vaccinations, 524; re-vaccinations, 24. Only successful vaccinations are included in this total. I have no means of estimating the number of vaccinations and re-vaccinations performed by other medical men in the town. It would be a great safeguard if a system of re-vaccination of all children after attaining the age of 12 years, could be instituted, but I am afraid that the tendency among many is to neglect even primary vaccination. There seems to be an increasing number seeking to take advantage of the conscientious objector clause, and if this spreads there will be serious consequences to face in the future. There can be no doubt that it is merely ignorance and prejudice that lead to this antipathy to vaccination. I have never yet met anyone who had really studied the question, and had a practical knowledge of small-pox and of vaccination, who had not also a thorough belief in the efficacy of this preventive measure.

The harmful results alleged to be due to vaccination generally dwindle to insignificance when investigated, and in most cases where there seems to be a certain amount of foundation for the belief in these injurious effects, it is a case of the old fallacy of “post hoc ergo propter,” and the results would have occurred in any case irrespective of vaccination.

### PART III.

#### WORK OF THE HEALTH DEPARTMENT, 1905.



The work of the Health Department has been carried out by the Inspectors and Drain Testers, under the direction of the Medical Officer of Health and of the Chief Inspector, Mr. T. Sanderson.

The only change in the staff of Inspectors has occurred through the sad death at an early age of Inspector Bailey, who had faithfully served the Corporation for many years in various capacities, and had held the position of Sanitary Inspector for 4 years. His illness compelled him reluctantly to give up his duties about the beginning of September ; and he rapidly became worse, and died on the first of November.

A successor was appointed in January, 1906, in the person of Mr. Joseph Tolmaer, who has shown great ability in the theoretical part of his work.

The card system of keeping of records, to which I referred last year, has been further extended and has proved of great utility, simplifying the records and correlating various branches of work. Reference to past work is very greatly facilitated, and as years go on the value of the system will be more and more apparent.

The system is founded on the address or number and street of the house or premises, as the basis or key to the record. Each card record, when completed, is filed in a cabinet, so that all in one street are together, the numbers coming according to their sequence, whilst the streets are arranged alphabetically. At any moment one can look up the sanitary record of a house as regards deaths, infectious diseases or sanitary defects by turning up the cards in the stock cabinet.

I should be pleased to show and explain the whole system to anyone interested in administrative details.

The following is a summary of the work done in the Sanitary Department during the year, chiefly in regard to the abatement of nuisances and the remedying of sanitary defects; to this is appended a summary of the enquiries made into cases of infectious disease, and details as to the amount of work done in the way of disinfecting houses and goods.

### SUMMARY.

			1904.	1905.
Complaints received	...	...	231	256
Visits and Inspections (Total)...	...	...	12,736	14,521
Number of Houses fully inspected	...	...	814	850
Number of inspections of work in progress	...	...	2,902	3,016
Visits to houses and other premises	...	...	1,891	2,324
Re-inspections in relation to nuisances under notice	...	...	1,587	1,217
Inspections of Factories and Workshops	...	...	158	46
Inspections of Bakehouses	...	...	175	142
Inspections of Common Lodging-houses	...	...	932	949
Inspections of Manure Heaps	...	...	130	219
Sands Inspections	...	...	161	245
Visits and Enquiries in relation to Infectious Diseases	...	...	3,108	2,654
Enquiries into Deaths	...	...	713	826
Smoke observations (half-hour duration each)	...	...	67	15
Visits under Shop Hours Acts	...	...	6	1,878
Visits made under Midwives' Act, 1902	...	...	26	12
Visits to Tents, Vans, and Sheds	...	...	66	128

					1904.	1905.
<b>Notices Served for the Abatement of Nuisances—</b>						
Councils	..	..	..	..	137	109
Preliminary	..	..	..	..	759	715
Verbal	..	..	..	..	122	160
<b>House Drains Tested—Total Number of Tests made ..</b>					1,776	1,656
<b>New Houses Examined—</b>						
Drains	{	Fully Satisfactory	..	..	3	7
		Passable	..	..	242	193
		Unsatisfactory	..	..	49	1
W.C.'s	{	Satisfactory	..	..	406	292
		Of defective construction	..	..	24	—
Ash] Receptacles	{	Satisfactory	..	..	84	47
		Unsatisfactory	..	..	212	147
Site of House	{	Satisfactory	..	..	275	197
		Unsatisfactory	..	..	23	4
<b>Other Houses</b>	{ (1st test)	Satisfactory	..	..	38	54
		Unsatisfactory	..	..	322	304
House Drains re-tested during re-laying					814	796
<b>Houses passed off as satisfactory after drainage defects repaired...</b>					308	301
<b>Number of Houses where sanitary defects were found</b>					883	901
<b>Number of Houses where sanitary defects were remedied</b>					711	734
<b>Number of sanitary defects remedied</b> ... ..					1,646	1,869
<b>Drains.</b>						
Drains laid, re-laid, disconnected, and ventilated ..					323	333
Drains repaired and cleaned out .. ..					232	308
Unsuitable gully traps replaced by properly trapped gullies and new gullies fixed .. ..					51	66
<b>W.C.'s.</b>						
New w.c.'s fixed in lieu of privies, pail closets, and defective w.c.'s .. ..					41	24
Water closets repaired .. ..					146	129
Water closets unblocked .. ..					36	40
Fittings and water provided for w.c.'s .. ..					32	18
W.C. soil pipes repaired and ventilated .. ..					34	51

<b>Refuse Receptacles.</b> (See also Special Report).				1904.	1905.
Ashpits abolished	..	..	..	4	—
Ashbins provided	..	..	..	11	9
Ash receptacles repaired	..	..	..	2	1
Manure receptacles provided	..	..	..	7	7
Cesspools abolished	..	..	..	1	—
Privies abolished	..	..	..	7	—
Pail closet abolished	..	..	..	—	—
Sanitary conveniences provided at World's Fair					
Ground (Earth closets)	..	..	..	—	12
Sanitary conveniences provided at World's Fair					
Ground (Urinals)	..	..	..	—	6
<b>Waste Pipes.</b>					
Bath, lavatory, slopstone, and rainwater pipes disconnected over gullies	..	..	..	9	18
Do. do. do. wastepipes trapped	..	..	..	12	9
New slopstone wastepipes fixed	..	..	..	46	58
New rainwater pipes fixed	..	..	..	4	6
Rainwater pipes and roof gutters repaired	..	..	..	44	33
<b>Miscellaneous.</b>					
Houses cleansed and limewashed	..	..	..	22	6
Floors re-laid with flags	..	..	..	34	33
Floors re-laid with concrete	..	..	..	83	60
Back yards repaired	..	..	..	55	135
Back yards flagged or concreted	..	..	..	163	146
Back passages cleansed	..	..	..	9	16
Accumulations removed	..	..	..	85	114
Animals removed from improper situations	..	..	..	36	22
Roofs repaired	..	..	..	10	16
Rooms ventilated	..	..	..	58	128
Chimneys raised to abate smoke nuisance	..	..	..	5	2
Premises closed	..	..	..	1	3
Yards cleansed	..	..	..	40	20
Watercourse cleansed	..	..	..	1	7
Gable end of house cemented	..	..	..	—	1
Overcrowding ceased	..	..	..	2	1
Number of manholes inspected	..	..	..	1,464	140
Number of manholes reported to Cleansing Superintendent	..	..	..	259	14
Number of street gullies inspected	..	..	..	—	5,137
Number of street gullies reported defective and allowing escape of sewer gas	..	..	..	—	93

			1904.	1905.
Back Streets requiring forming reported .. ..			64	26
Erection in Yards, &c., reported .. ..			5	7
Letters .. .. .			2,200	2,282

### Infectious Diseases.

Inquiries into cases of Infectious Disease (see Visits and inspections) .. ..			-	—
Houses disinfected after cases of Infectious Diseases .. .. .			1,280	1,274
Houses disinfected after cases of consumption..			24	41
Other premises disinfected .. .. .			65	76
Isolation notices served upon householders ..			1,490	1,267
Isolation notices served upon School Managers..			1,023	965
Other notices to School Managers with regard to Infectious Disease.. .. .			961	1,100
Other notices to Householders with regard to In- fectious Disease .. .. .			326	1,100
Notices to Free Library with regard to Infectious Disease .. .. .			1,056	1,166

### Articles removed from 371 Houses to Sanatorium.

Sheets, quilts, blankets, etc. .. ..			3,017	
Articles of clothing .. .. .			15,585	
Pillows and bolsters .. .. .			1,778	
Beds .. .. .			578	
Mattresses .. .. .			523	
Carpets .. .. .			1,102	
Rugs and mats .. .. .			835	
Curtains .. .. .			1,633	
Cushions .. .. .			613	
Table cloths .. .. .			475	
Books .. .. .			188	
Miscellaneous articles .. .. .			4,772	
Articles from Sanatorium .. .. .			3,228	

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Total .. .. .			<u>34,327</u>	
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Only 201 new houses have been tested during the year, as compared with 294 in 1904, and 312 in 1903.

The question of the form of ash receptacle to be supplied in new houses remains in an unsatisfactory condition. The modified ash-receptacle built of brick and cemented inside, with doors into the yard and into the back street, was adopted some years ago by the Council as the prescribed form, but latterly most new houses have simply provided a more or less satisfactory galvanised ash-bin, placed loose in the yard. That is why so many new houses are classified as with unsatisfactory ash-receptacles.

A good galvanised bin is very suitable for the storage of dry refuse, but I am strongly of opinion that some special place should be provided for it. Some form of galvanised cage with an irremovable cover to keep the rain out should be provided, fixed firmly into the wall of the yard, so as to support the bottom of the bin at least 9 inches above the floor of the yard. If an opening through the yard wall were objected to, owing to its liability to be damaged, and owing to the facilities it offers to rag-pickers, the cage could be arranged so as to allow the removal of the bin only by coming inside the yard.

A galvanised bin arranged in this way offers many advantages. It does not hold too much, and therefore requires fairly frequent emptying. It is light enough to allow the scavengers easily to lift it up, and empty the contents into the cart, without causing dust or nuisance. It is kept off the floor of the yard, and the bottom does not get wet and rust so easily, nor can a mass of wet refuse form around the bottom. The lid being permanently fixed at a little distance above the top of the bin does not get lost. It

keeps out the rain, and at the same time allows constant ventilation of the inside of the bin.

In a considerable number of instances, lavatory or slop-waste pipes were found trapped. This is very satisfactory and shows that although the Building Bye-laws do not enforce this precaution, some builders see the advantage of it ; it is specially important in the case of scullery sink waste-pipes, as the scullery is frequently used for the storage of food, and a foul slop-waste pipe is particularly liable to lead to the early souring of Milk or tainting of Meat stored in the vicinity.

House drains have been tested in the case of 358 houses (other than new houses) owing to complaints received, or the occurrence of infectious disease, or in the course of systematic inspection as required by the order of the Local Government Board. Of these 358 houses, 54 were found satisfactory. Among these were some, tested on account of infectious disease, where drains had been re-laid with cement joints under the direction of the Health Department, and it was gratifying to find that these had remained satisfactory after (in some instances) years had elapsed since the re-laying.

It was also gratifying to find amongst some property owners a readiness to carry out the requirements of the Health Department, and even to go beyond the minimum that could be legally enforced. Mr. Sanderson, the Chief Inspector, has frequently found owners prepared to put in manholes and inspection chambers when their advantages have been explained, and on the whole the standard of the sanitary work done steadily improves.

Some points observed during the sanitary work of the year may be of interest.

On testing some property where sanitary defects were suspected, we found a lavatory waste-pipe from one house, and a slop waste-pipe from another house, both discharged into a P-trap fixed within the building. The first joint of the drain beyond the trap was of cement, but all the other joints were open, and this open-jointed drain ran direct to the sewer without any disconnection. A subsoil field tile drain ran under one of the adjoining houses, and was connected to the same main drain, thus ventilating the sewer under the house.

i There has been a tendency recently on the part of certain property-owners to alter houses so as to divide them into two separate tenements one at the front and one at the rear, thus forming back-to-back houses of a very objectionable type. Glaring cases in Rothsay Road and Keswick Road occurred in 1905. In one case 8 houses in one row had been thus altered, and in the other two houses had been altered, and more would have been attempted had not action been taken. In both cases the owners were summoned, with the result that each was fined 60s. and costs altogether for the various breaches of the Bye-laws.

In connection with the examination of the drains of a new house the drains were found very defective. On excavating it was found that one of the drain-pipes was smashed, a brick lying in the broken pipe. This, of course, was simply the result of gross carelessness in filling up the drain-trench, and shows the importance of a final test to make sure there has been no settlement, injury to, or disturbance of the drain after being laid correctly in the first instance.

In connection with some newly-erected property, complaints of bad smells caused an investigation, when it was found that a disconnecting manhole had been fixed inside the property in one of the cellars. The drain had not sufficient fall to clear itself, and the manhole had constantly foul liquid in it, and as the lid was not tight there was naturally an objectionable odour. On giving notice to the owner the manhole was removed outside to the yard, a new iron drain run through with proper fall, thus entirely abolishing the nuisance.

As frequent requests are made to the Health Department to disinfect houses in order to rid them of vermin, the Sanitary Committee authorised me to do such work when required, and to make a reasonable charge to cover the expense sustained by the Corporation in doing the work. Altogether 49 houses were stoved on account of vermin during 1905.

The Sanitary Committee also authorised me to employ the men of the drain testing and disinfecting staff, when not required for other duties, to go round private houses on request and cleanse and flush yard gullies for the occupiers, a small charge being made to cover the expense. Several people made arrangements for periodic visits for this purpose. I am sure this move is in the right direction. I was also authorised to allow the staff to make small repairs to drains, and to remedy other slight sanitary defects subject to the owner of the property undertaking to bear the cost. This arrangement has worked very well during the year and has often saved the issuing of nuisance notices for small defects.

I referred last year to the increasing number of unsightly wooden buildings erected on vacant land for the keeping of poultry, and the more objectionable sequence of proceeding to keep pigs in these wooden buildings without carrying out the Bye-laws.

Notices have been served on a good many occupiers of these piggeries ; some have been abolished, some have provided proper floors and suitable drainage, and some are still left, and it may be necessary to prosecute in these instances.

Some attention has also been given to the condition of manure receptacles. These have been inspected frequently and notices served when they were not found to be emptied regularly in accordance with the Bye-laws, and where the receptacles were unsuitable the owners were required to make alterations.

In one instance a manure receptacle close to the junction of two principal streets was in a very dilapidated condition, with no proper floor, and containing a large quantity of wet and offensive material. As the owner refused to do anything to remedy matters it was necessary to take legal proceedings under the Nuisance Bye-laws. The occupier was fined 5s. and costs, and told that he must comply with the Bye-laws.

A very regrettable instance of overcrowding and filth was discovered in August, a woman and five children occupying two rooms in a house in Wood Street. The rooms and the bedding and everything else were in a filthy condition, and the children covered with vermin. The attention of the Inspector of the N.S.P.C.C. was called to the case, and he took proceedings against the mother.

Complaints of foul smells in connection with street gullies led me to make an investigation into this matter. No fewer than 5,137 gullies have been inspected; of these a large number have been found of a very defective type, and 93 were discovered to be allowing the free escape of foul sewer gas.

Owing to complaints made by visitors, a systematic investigation of the town was commenced in 1902 in regard to the matter of ash receptacles. It was found that many houses were without suitable provision in this respect, and the Sanitary Committee adopted a strong galvanised iron ash-bin with cover as the approved form to be provided in the case of old houses. From the fact of the liability to loss or damage of moveable ash receptacles, it is evident that constant attention by the inspectors will be necessary to prevent the condition of affairs being as bad as before the systematic inspections were started. The following is a summary of the work done in this direction :—

Details of work done in regard to ASH RECEPTACLES from January 1st to December 31st, 1905 :—

<b>Total number of visits made</b>	...	...	2,785
Satisfactory ash receptacles	..	..	460
Unsatisfactory ash receptacles	..	..	393
Re-inspection of houses under notice	..	..	1,932
		Preliminary.	Council.
Total number of notices served	(a) To abolish ashpits	..	—
	(b) To repair modified ashpits	..	3
	(c) To provide galvanised ashbins	..	164
Total number of modified ashpits repaired	..	—	3
Total number of ashpits abolished	..	..	—
Total number of galvanised ashbins provided	..	—	287
Total number of informations laid	..	..	—
			447

## SMOKE NUISANCES.

A good deal of interest was taken in the question of the smoke nuisance during 1905, but on the whole I think there was less cause for complaint than in previous years.

One of the chief offenders in the past, the Electricity works chimney, showed great improvement during 1905, apparently due to the alterations and improvements carried out by Mr. Furness. I am glad, but not at all surprised, to learn that these improvements, whilst materially lessening the smoke nuisance, have also led to a great reduction in the coal bill. It is obvious that when solid particles of carbon are being emitted from a chimney there is a constant loss of heat-giving materials. Many others might find similar economies result from a more scientific use of their fuel. In many cases, if not in most, black smoke means carelessness or wastefulness in firing.

The Destructor chimney was a frequent cause of complaint from a few individuals during the summer, but the nuisance from this was not due to "black" smoke, and therefore could not be dealt with as a nuisance under that special clause of the 91st Section of the Public Health Act.

At times there were certainly disagreeable odours from this chimney, but I believe that these were frequently due to a lowering of the temperature in the combustion chamber, due to some carelessness on the part of the attendants, or to the unfavourable constitution of the Blackpool refuse during the season. This often consists of large masses of vegetable and animal refuse, with very little dry ash. Probably it will always be necessary to burn some coke along with such material. If the fish refuse could be dealt

with separately without nuisance it would much improve the chances of an odourless destructor smoke. I am much inclined to think, however, that the Destructor chimney was often blamed for objectionable odours which came from other sources in the neighbourhood.

Only 15 formal half-hour observations of smoke were made, and in 4 cases black smoke was observed for more than  $2\frac{1}{2}$  minutes during the half-hour. In these cases warnings were given by letter or personal visit. No prosecutions were undertaken. I regret that there is reason to think that Blackpool is beginning to suffer more from the smoke nuisance due to its increasing size, viz., that from private houses, which is the chief factor in causing sooty deposits in and on buildings. This has not, as yet, caused much impairment to the clearness of our atmosphere, particularly on fresh, breezy days, but if this trouble gets much worse, I am afraid our reputation for freedom from fog will not be sustained long. I am hoping that the extended use of gas for heating and for cooking purposes will render the day far distant when fogs will become known here.

#### COMMON LODGING-HOUSES.

Under the Blackpool Improvement Act, 1901, section 47, the three Common Lodging-houses previously existing were re-registered. I am glad to state that all the houses have been managed satisfactorily. The total number of inspections of Common Lodging-houses made during the year was 949—a large number—due to the fact that I had them visited nearly every day in order to keep them under strict supervision on account of the possibility of the introduction of infectious disease, especially small-pox, by vagrants.

Also the keepers were required each day to fill up schedules containing the names of all persons sleeping there the previous night, and stating where they had been during the previous fortnight.

Only one case of infectious disease was reported from the Common Lodging-houses during the year, namely, a case of typhoid fever.

#### FORMATION, PAVING, &c., OF STREETS.

During 1905, I reported to the Borough Surveyor 1 front street, and 25 back streets and passages as being in a dirty condition and requiring forming, 26 in all. Many others had already been reported in 1904.

A considerable amount of work has been done under the direction of the Highway Committee during 1905, and by the courtesy of the Borough Surveyor I am able to give the following lists :—

#### PRIVATE STREET WORKS.

COMPLETED BETWEEN JANUARY 1ST AND DECEMBER 31ST, 1905.

##### FRONT STREETS—9.

Boome Street.  
 Cheltenham Road.  
 Queen's Road.  
 Cunliffe Road.  
 Withnell Road, from Simpson Street to the Promenade.  
 Hardman Street.  
 Highfield Avenue.  
 Johnson Road.  
 Clare Street East.

## BACK STREETS—28.

Back Boome Street.

Back Street behind Pleasant Grove.

Do. between Nos. 8 and 10, Foxhall Road.

Do. behind Foxhall Road, Yorkshire Street, Bonny Street, and Bairstow Street.

Do. on east side of Coronation Street, in front of Salvation Army Citadel.

Do. between Caunce Street and Peter Street.

Do. between Nos. 6 and 8, Palatine Road, and behind Nos. 8 to 20, Palatine Road.

Do. between Rydal Avenue and Ashton Road.

Do. behind premises on the east side of Queen's Road.

Do. on north side of Cunliffe Road.

Do. behind Boothroyden.

Do. between Nos. 52 and 54, Woolman Road.

Do. off Eden Street, and behind George Street and Buchanan Street.

Do. behind Nos. 6 to 20 Ribble Road.

Do. between Montrose Avenue and Rydal Avenue.

Do. behind Rothsay Road.

Do. behind Henry Street.

Do. behind Bloomfield Road.

Do. behind Cleveley's Terrace, Central Drive.

Do. behind Central Road.

Do. between Bolton Street and Victoria Terrace.

Do. between Withnell Road and Osborne Road.

Do. off Montague Street.

Do. behind Nos. 67 to 75, Church Street, S.S.

Do. behind Nos. 2 to 10, Montague Street.

Do. behind Park Avenue.

Do. north side of No. 2, Leopold Grove.

Do. behind Lord Street, Dickson Road, Banks Street, and Springfield Road.

## BACK PASSAGES—4.

Behind Nos. 10 to 16, Foxhall Road.

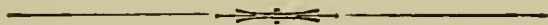
Between Lytham Road and Hill Street.

Between Lytham Road and Tyldesley Road.

Behind Crystal Road and Ashton Grove.

## OFFENSIVE TRADES.

There are very few offensive trades carried on in the Borough. One rag and bone dealer carries on business in Queenstown, and another carries on a similar business in a field off Bloomfield Road. At the Public Slaughter-houses accommodation has been found for two tripe-boiling businesses and for one gut-scraping business. These practically include all the offensive trades carried on in the Borough.



## FACTORY AND WORKSHOP ACT, 1901.

In accordance with the provisions of Sect. 132 of the Act, every Medical Officer of Health is required in his Annual Report to "report specifically on the administration of this Act in workshops and workplaces, and he shall send a copy of his annual report, or as much of it as deals with this subject, to the Secretary of State."

The administration of the Act as regards Factories comes more under the Government Factory Inspector, which accounts for the fact that only one visit has been paid to Factories by our Inspectors during the year. If the Government Inspector on his visit to a Factory notices any deficiencies as to Sanitary accommodation, &c., he sends word to the Medical Officer of Health, and then our Inspectors take the matter up.

There are 170 Factories registered in the Borough, and through the courtesy of Mr. Law, the Inspector of Factories for this District, I am able to give the following classification :—

<i>Building Trades :</i>	Forward . . . . .	104
Joiners, saw-mills, cabinet makers, &c. . . . .		39
Firewood cutting . . . . .		1
Stone cutting . . . . .		14
Brick-making . . . . .		13
Mortar making . . . . .		2
		—69
<i>Engineering, Vehicles, &amp;c. .</i>		
Engineers and Smiths... .		6
Coachmakers and wheelwrights . . . . .		6
Cycle works... . . . .		1
Motor Car Repairers.... .		2
		—15
<i>Printing, Books, &amp;c. :</i>		
Letterpress printing, &c.. .		11
Bookbinding . . . . .		1
		—12
<i>Clothing :</i>		
Boot Repairers . . . . .		3
Underclothing... . . . .		1
		— 4
<i>Miscellaneous :</i>		
Musical Instrument Repairers . . . . .		1
Electro Plating . . . . .		1
Jewellery . . . . .		1
Wire Mattresses . . . . .		1
		— 4
		—
		104
<i>Preparation of Food :</i>		
Ærated Water Manufacture . . . . .		19
Beer bottling . . . . .		2
Brewery . . . . .		1
Ice Cream... . . . .		1
Sterilised milk and Dairy Factories . . . . .		2
Bakers . . . . .		8
Provender and Corn . . . .		8
Sausage making, currant cleaning, &c. . . . .		6
Cigar factory... . . . .		1
		—48
Laundries . . . . .		8
<i>Lighting :</i>		
Gas works . . . . .		1
Electricity production .. .		9
		—10
		—
Total . . . . .		170
		==

As regards Workshops, there are 447 in all registered in the Borough, classified as follows :—

*Clothing, &c. :*

Milliners .....	19
Tailors .....	45
*Dress.....	51
Boots and Clogs.....	57
Underclothing and baby linen .....	7
Hosiery.....	4
	—183

*Food and Drink :*

Bakers and confectioners	180
Fish curing .....	1
Sugar boiling .....	4
Beer bottling .....	3
Plucking place .....	1
	—189

*Building Trades :*

Plumbing .....	9
Joiners .....	8
Concrete flags .....	—
	— 17

*Furniture :*

Cabinetmaking and uphol- stery .....	10
Wire mattresses .....	1
French polisher .....	1
	— 12

401

Forward .....401

*Conveyances, &c. :*

Wheelwrights and coach builders .....	5
Coach painters .....	—
Saddlery .....	4
Black and whitesmiths .	6
Cycle repairs .....	6
Gunsmith.....	1
	— 22

*Jewellery, &c. :*

Watch repairing .....	2
Jewellery .....	—
Plaque painting .....	—
Photo mounting, &c. ..	9
Picture-frame making ..	2
Engraving .....	—
	— 13

*Other Trades :*

Hand Laundries .....	1
Dry cleaning .....	—
Cigar manufacturer ...	1
Brush manufacturer ...	2
Painter .....	2
Bookbinder .....	2
Fibrous Plasterer.....	1
Firewood .....	1
Electrical Appliances ..	1
	— 11

Total .....447

NOTE.—Where Millinery and Dress are made on the same premises they are classified under “Dress.”

I now submit the following report as to the proceedings which have been taken in Blackpool in connection with the supervision of the Factories, Workshops, and Workplaces of the Borough in regard to those matters placed by the Act under the control of the local sanitary authority in the official form required by the Home Office :—

## FACTORIES, WORKSHOPS, LAUNDRIES, WORK- PLACES, AND HOMEWORK.

### I.—INSPECTION.

INCLUDING INSPECTIONS MADE BY SANITARY INSPECTORS OR INSPECTORS OF  
NUISANCES.

PREMISES.	Number of		
	Inspections.	Written Notices	Prosecution
FACTORIES ..... (Including Factory Laundries)	1	.. ..	.....
WORKSHOPS ..... (Including Workshop Laundries)	183	31	.....
WORKPLACES .. .. .	598	.....	.....
HOMEWORKER'S PREMISES .. .	4	.....	.....
TOTAL .....	786	31	.....

## 2.—DEFECTS FOUND.

PARTICULARS.	Number of Defects			Number of Prosecutions
	Found	Re-medied	Referred to H M. Inspector.	
<i>Nuisances under the Public Health Acts :—*</i>				
Want of Cleanliness.....	12	18	...	...
Want of Ventilation .....	1	4	...	...
Overcrowding .....	...	...	...	...
Want of Draining of Floors .....	...	...	...	...
Defective Drains .....	4	10	...	...
Other Nuisances: .....	11	18	...	...
Sanitary accommodations... {	Insufficient .....	1	1	...
	Unsuitable or Defective ...	...	...	...
	Not separate for sexes .....	1	2	...
<i>Offences under the Factory and Workshop Act :—</i>				
Illegal occupation of underground bakehouses (S. 101).....	...	...	...	...
Breach of special Sanitary requirements for bakehouses (SS. 97 to 100) .....	...	...	...	...
Failure as regards list of outworkers (S. 107) ...	...	...	...	...
Giving out work to be done in premises which are {	Unwholesome(S.108)	...	...	...
	Infected (S. 110)...	...	...	...
Allowing wearing apparel to be made in premises infected by Scarlet Fever or small-pox (S. 109).....	...	...	...	...
Other offences .....	...	...	...	...
TOTAL .....	30	53	...	...

\* Including those specified in Sections 2, 3, 7, and 8 of the Factory Act as remediable under the Public Health Acts.

## 3.—OTHER MATTERS.

CLASS.		Number.	
Matters notified to H.M. Inspectors of Factories :—			
Failure to affix Abstract of the Factory and Workshop Act (S. 133) .....		4	
Action taken in matters referred by H.M. Inspectors as remediable under the Public Health Acts, but not under the Factory Acts (S. 5) {		Notified by H M. Inspector ..... 11	
		Reports (of action taken) sent to H M Inspectors... 11	
Other.....		...	
Underground Bakehouses (S. 101) :—			
Certificates granted during year .....		3	
In use at the end of year .....		6	
Homework :—		Number of	
<i>Lists of Outworkers*</i> (S. 107) :—		Lists.	Outwk's
Lists received .....		6	11
Addresses of outworkers... {		Forwarded to other authorities 4	
		Received from other authorities 1	
<i>Homework in unwholesome or infected premises :—</i>		Wearing Apparel.	Other
Notices prohibiting homework in unwholesome premises (S. 108) .....		...	...
Cases of infectious disease notified in homeworkers' premises .....		...	...
Orders prohibiting homework in infected premises (S. 110).....		...	...
Workshops on Register (S.131) at end of 1904.			
Important classes of work-shops, such as workshop bakehouses, may be enumerated here.	Making of wearing apparel .....	183	
	Workshop Bakehouses.....	180	
	Preparation of other Foods, & .....	9	
	Building Trades .....	17	
	Furniture Making. &c. ....	12	
	Conveyances, &c. ....	22	
	Other Trades .....	24	
Total number of Workshops on Register ...		447	

\*The Lists should be received twice in the year. The year's figures required in the Table are then obtained by adding together the two half-yearly totals.

The total number of visits to "Workplaces," viz., 598, includes 131 visits to restaurant kitchens, and 467 to Ice Cream Workshops, but does not include 1,075 visits to Slaughter-houses, which should probably be considered workplaces also, which would bring the number of visits to Workplaces up to 1,673.

Defects as to want of cleanliness, &c., in many of these workplaces were remedied on verbal notice by the Inspector but no record was kept of these.

The three underground Bakehouses to which I referred last year as not having received certificates under the Act, through failure to complete the required alterations, have since been altered to comply with the requirements laid down by the Sanitary Committee, and certificates have been granted. In each case an electrically-driven fan has been provided in order to ensure satisfactory ventilation.

I regret that the section in regard to lists of outworkers being transmitted regularly seems to be either intentionally or ignorantly overlooked in many cases. I propose to send to every occupier of workshops scheduled for this matter a warning notice, and if they neglect to send in the lists, to prosecute when sufficient evidence is forthcoming.

### SHOP HOURS' ACTS.

Under the various Shop Hours Acts, 1,878 visits were made during 1905, chiefly for the purpose of compiling a register of shops in view of the proposal to make a closing order under the 1904 Act.

In 13 instances shopkeepers were found to be employing young persons for more than 74 hours in the week. The times worked varied from 75 hours to 83 hours per week. No prosecutions were instituted, but the shopkeepers were verbally warned in each instance, and in three of the worst cases warning letters were also sent, and the offenders ceased to employ their assistants beyond the proper time, the occupiers of the shops arranging with us the hours at which their assistants should commence and leave off work. Our Inspectors made frequent surprise visits to make sure that this was being strictly adhered to.

#### SHOP HOURS' ACT, 1904.

This caused a very considerable amount of work during last year. An application, largely supported by tradesmen, was presented to the Corporation, asking for an early closing order to be made under the Act. A meeting was called, including representatives of the various interests concerned, and a strong feeling in favour of such an order was manifested. Accordingly the Town Clerk and the Medical Officer of Health were instructed to take the necessary steps in connection with the draft order. A register of shops had to be prepared, and this was done by visits of the Sanitary staff to the various streets of the Borough, 1,779 shops being discovered and placed on the register. A draft order was prepared embodying the wishes expressed at the meeting referred to. The hours fixed were as follows :—Mondays, Tuesdays, and Thursdays 7-30 p.m., Wednesdays 1 p.m., Fridays 8 p.m., and Saturdays 10-30 p.m. For Hairdressers and Barbers the closing hour was fixed at 8-30 on Mondays, Tuesdays, and Thursdays, 9 o'clock on Fridays, 1-30 on Wednesdays, and 10-30

on Saturdays, and the order referred to the winter months only. The order was carefully drafted so as to include the sale from carts, barrows, and stalls, and also auction rooms, &c. On publication of the draft order and the necessary notice, objections came in and applications for exemption. Among the special trades asking for exemption were farmers and milk dealers (especially for Wednesday afternoons), fried fish and chip and tripe dealers, sweet sellers, and auctioneers. The Sanitary Committee recognised the special conditions in the two first-named trades, and agreed to their exemption. Much dissatisfaction, however, appeared to be felt, especially by the shopkeepers in the outlying parts of the town, many of whom signed a petition against the making of an order, and ultimately the Council decided to let the whole matter drop. The Hair Dressers' Association, however, claim to have an order made to apply to their own particular trade if a general order is not forthcoming, and this application has been remitted to a special Sub-Committee.

It may be interesting to give some particulars based on an analysis of the register of shops. As might be expected, the shops concerned with the selling of various forms of food preponderate. Grocers and general provision dealers numbered 272; there were 71 greengrocers (including florists and fruiterers), 111 butchers, 28 fishmongers, 125 bakers and confectioners. Besides these there were 80 fish and chip and tripe shops, 9 oyster and shrimp sellers, 33 restaurants and cafés, 4 tea and coffee merchants. Sweet shops were very numerous, 59 being chiefly engaged in this trade; and there were 64 tobacco-nists, but many classified under other headings deal also in sweets and tobacco. Drapers, milliners, dress and mantle

makers, tailors and outfitters, old clothes or wardrobe dealers, dyers and cleaners, united number 229; hatters, glovers, and hosiers were 9; boot and shoe makers and repairers and cloggers numbered 98; house furnishers, furniture brokers, cabinetmakers, plumbers, painters, and decorators, joiners and ironmongers, 104. Then there were 32 chemists, 58 hairdressers, 27 watchmakers and jewellers, 8 dealers in bassinets and mail carts, 12 cycle or motor agents or makers, 5 gilders and picture framers, 3 music dealers. We have to add 25 photographers; 61 stationers, booksellers and newsagents; and no less than 109 dealers in toys and fancy goods. Sixty-two shops were empty at the time of the investigation, and some were closed although still in occupation. One observes some curious mingling of trades in some shops. Many grocers sell other articles, as for instance meat and vegetables, one also sells china, and frequently other trades were mixed in a similar way.



#### MIDWIVES ACT, 1902.

On Blackpool becoming a County Borough, the administration of this Act passed to the Local Authority from the County Council. Dr. Sergeant, therefore, kindly sent me a list of ten persons who had applied to be certified under the Act.

I then sent notices to all persons of whom I could hear who had been known to act as midwives, informing them of the provisions of the Act, and of the necessity for applying for certification before March 31st, 1905.

As a result altogether 22 persons were certified under the Act, and entered on our Register of Midwives, but it was found that one of these lived just outside the Borough, and she comes, therefore, under the jurisdiction of the County Council.

Of the 22 persons certified, five only had diplomas or certificates from lying-in hospitals. The other 17 claimed to be certified under section 2 of the Act as having been in *bona-fide* practice as a midwife for at least one year previous to the passing of the Act.

Two of the 22 stated that they had no intention of practising independently as midwives. Two have removed from the district during the year, so that there are only 18 now on the register. Four changes of address have been reported during the year, and transmitted to the Central Midwives Board.

On visiting the persons registered I found that the majority had a copy of the rules, but seemed either not to have read them or not to understand their meaning. Very few had proper bags or appliances; most of them used washable dresses. In no case had they separate appliances for vaginal douches and for giving enemata.

Five forms have been sent in in regard to the summoning of medical assistance, and seven still-births have been notified. I am afraid the rules have not been strictly carried out as regards these points. Both verbally and by circular the midwives have been informed that it will be necessary to comply strictly with the rules.

## SANDS INSPECTION.

Regular inspections of the sands have been continued during 1905. Altogether 245 inspections have been made.

I am quite convinced that on the whole the condition of the sands has much improved during the last five or six years, the sands being clean and firm, showing that the sewage sludge is being well carried away. Unfortunately there have been fairly numerous occasions when the presence of small quantities of fresh solid excreta on the sands near low water mark has been highly objectionable. I think every effort should be made to prevent this very disagreeable occurrence, and I would suggest that arrangements should be made, as at many other sewage outfalls, for the screening of the sewage and the breaking up of the solids. This would very greatly improve matters. Also I think the sewer outfall pipe should be extended beyond the next bank of sand.

## BYE-LAWS AS TO TENTS, VANS, AND SHEDS.

The strict enforcement of these Bye-laws during the last few years has had an admirable result. We are very rarely troubled now with the itinerant van dwellers. Those who do come settle down in one or other of the locations which have been arranged and comply with our requirements

Frequent visits are paid to see that proper cleanliness is observed, and we find no difficulty either with the gipsies or with others. Altogether 128 visits of inspection were made under these Bye-laws.

I have already alluded to the sanitary conveniences erected for the South Shore fair ground.

## SALE OF FOOD AND DRUGS ACTS.

The following Samples were taken for Analysis under the procedure enjoined by the above Acts :—

SUMMARY SHOWING NUMBER OF SAMPLES ANALYSED DURING 1905.

Description of Article.	No. of Samples analysed.	No. of Samples genuine	No. of Samples not genuine	
			Total No.	Official No.
Arrowroot.....	2	2	...	...
Butter .....	35	33	2	878, 993
Camphorated Oil .....	6	5	1	6
Cheese .....	4	4	...	...
Coffee .....	14	14	...	...
Corn Flour .....	1	1	...	...
Cream .....	7	2	5	934, 946, 948, 952, 975
Cream of Tarter .....	2	2	...	...
Gin .....	1	1	...	...
Ginger .....	1	1	...	...
Lard .....	10	10	...	...
Malt Vinegar .....	1	1	...	...
Margarine .....	3	3	...	...
Marmalade .....	1	1	...	...
Milk .....	58	50	8	958 959 960 961 977, 984 985 13
Pepper .....	3	3	...	...
Pepper (White) .....	5	5	...	...
Picked Shrimps.....	1	1	...	...
Potted Lobster .....	2	...	2	928, 950
Preserved Peas .....	1	...	1	947
Rum .....	1	1	...	...
Shrimps (Potted) .....	9	3	6	926, 927 929 941, 969, 990
Sweet Spirit of Nitre ...	2	1	1	55
Whiskey (Irish).....	2	2	...	...
Whiskey (Scotch) .....	5	5	...	...
Totals.....	177	151	26	...

Out of the 177 samples sent to the Public Analyst during the year twelve were informal samples ; three of Butter, Nos. 878, 910, and 913 ; 2 of Milk, 961 and 982 ; 2 of Lard, 911 and 914 ; 2 of Cheese, 912 and 937 ; 2 of Margarine, 915 and 936 ; and 1 of Cream, 962.

Of the 26 samples included in the Table as "not genuine," 14 are so classed because of the presence of borate preservative, namely, 5 samples of Cream, 1 of Milk, 2 of Potted Lobster, and 6 of Potted Shrimps.

The 5 samples of Cream contained the following proportions of borate preservative, calculated as boracic acid : No. 934 had 0.39 per cent. ; 946 had 0.5 per cent. ; 948 and 952 had each 0.48 per cent. ; and 975 had 0.51 per cent.

It was not thought necessary to prosecute in any of these cases, but warning letters were written to the vendors in two instances.

One sample of Cream contained no preservative, another had 0.09 per cent., and as this was below the amount recommended in the Report of the Departmental Committee as allowable, this sample is classed as genuine.

One sample of Milk (No. 960) was certified to contain three grains per pint of borate preservative, calculated as boracic acid, and although the amount was small, it was considered advisable to prosecute, so as to stamp out at once any tendency to use preservatives in milk. The result was a conviction, the defendant being fined 10s. and costs.

The two samples of Potted Lobster contained respectively 0.52 per cent. and 0.875 per cent. of borates, calculated as boracic acid. In the first case (sample 928) as the

amount came to 36.4 grains per pound, or only slightly over the 35 grains per pound which the Sanitary Committee had stipulated for as the maximum in potted shrimps, no action was taken, but in the other (sample 950) where the amount was equal to 61 grains per pound, a prosecution was ordered. The defendants wished the Corporation to withdraw the summons, but ultimately it was agreed that the defendants should plead guilty and undertake to sign an agreement not to send potted lobster in future containing more than 35 grains per pound of borate preservative ; the Corporation then consented not to press the case. The defendants at the hearing were fined 20s. and costs, and afterwards completed the agreement.

As regards the Potted Shrimps : Sample 926 contained 0.71 per cent. of borate preservative, calculated as boracic acid ; 927 contained 0.63 per cent. ; 929 had 0.54 per cent. ; 941 had 0.63 per cent. ; 969 had 0.6 per cent. ; whilst sample 990 contained 1.47 per cent. or 103 grains per pound.

In the earlier samples where the amounts did not much exceed 0.5 per cent. no legal action was taken, but warning letters were sent to the vendors. In the case of sample 990 a prosecution was instituted, and the defendants fined 10s. and costs.

Three samples of shrimps are counted as genuine, as they contained borate preservative in amount of 35 grains per pound or less. One sample, taken in June, contained only 20 grains per pound ; it is evident, therefore, that the large amounts sometimes used are unnecessary in order to preserve the shrimps for a reasonable time.

The one sample of Preserved Peas taken (No. 947) was found to contain 0.56 grains of copper equal to 2.2 grains

of crystallised sulphate of copper per pound, and as the amount was smaller than in our previous cases it was decided not to take a prosecution.

One sample of Sweet Spirit of Nitre contained only 0.87 per cent. of ethyl nitrate instead of the minimum of 1.75 per cent., and in this case a summons has been issued, but the trial has not yet taken place. [*Note*.—Prosecution in January, 1906. Defendant fined 5s. and costs.]

Two samples of Butter were found “not genuine” out of 35 samples taken. In the first case it was an informal sample (No. 878) obtained under extraordinary circumstances. One evening in January two men entered a confectioner’s shop in South Shore with a basket bearing what purported to be country butter in 1lb. pats, which they offered for sale. A gentleman present in the shop, either suspecting something, or for a joke, pretended to be an inspector, and said he would take a sample for the purpose of analysis. The men put the basket down saying they would leave the lot, and would call again in half an hour. They then decamped, and, of course, were never seen again. As they did not return, the basket with its contents, 14 1-lb. pats, was taken to the Police Station. I then directed Mr. Sanderson to send a sample for analysis, when it was found to contain 14.2 per cent. of water and 60 per cent. fats other than butter.

The other sample (No. 993) the Analyst reported to contain 17.77 per cent. of water, 78.65 per cent. butter fat of doubtful purity, and 3.58 per cent of curd, salt, &c., and remarked “The scientific evidence is not strong enough to justify a positive opinion in this case, although much work has been done on the composition of the fat. If possible

the source should be traced and further samples taken from time to time." We were informed that this sample came from Margarine Works in Holland, but were not able to procure further samples.

Two samples of Margarine sold and advertised under the name of "Colona" were taken during the year, sample 936 being informal, and 939 an official sample. This "Colona" was sold from a mass placed behind a marble erection on the counter, so that it could not be well seen. At the time of purchasing, the Margarine Labels were not on the mass, but were lying behind the marble screen. The material was wrapped in butter paper bearing the word "Margarine" in pale green letters, almost invisible by gaslight. There was every sign of an intention to deceive the unwary, but the Sanitary Committee came to the conclusion that the evidence was scarcely strong enough to support a prosecution under the Margarine Acts.

One sample of Camphorated Oil was found to contain 17 per cent. of camphor dissolved in mineral oil instead of 20 per cent. of camphor in olive oil. In this case the bottles were labelled "Camphor Embrocation," and on the Inspector declaring the purpose of the purchase the vendor said "It is camphor embrocation," although the Inspector had asked for "Camphorated Oil," and as the vendor had apparently genuine Camphorated Oil in other bottles, so labelled, it was thought not to be advisable to prosecute.

Of the 8 non-genuine samples of Milk one has already been referred to. As to the rest, only four were taken by the Inspector in the ordinary way, two of the others being taken at the farm during milking, and the third being an informal sample. Sample 958 contained 2.72 per cent. of fat and 9.15

per cent. other solids ; sample 959 contained 2.78 per cent. fat and 9.03 per cent. other solids.

Visits were paid to the two farms concerned, and no explanation could be given except the dry weather and the poverty of the grass.

Sample 961 was an informal sample taken at the same period of the year, and contained 2.60 per cent. fat and 9.23 other solids. It is intended to keep this supply under observation and take other samples.

Sample 977 contained 2.37 per cent. fat and 8.63 per cent. other solids ; along with the Inspector I visited the farm, to hear the same explanation—dry weather and shortage of grass. The Inspector took three samples at the farm after watching the cows being milked, and these samples showed respectively 3.20 per cent., 2.77 per cent., and 2.9 per cent. fat. These samples were procured 19 days after sample 977, and as two out of the three “ appeal to the cow ” samples showed a deficiency in fat no legal action was taken.

I am certainly inclined to think that the prolonged dry weather during last summer, and the accompanying poor-ness of grass may have had some influence in reducing the fat content in some instances, even although other foods were being given.

It is nevertheless the case that the average of all the samples taken during the summer was well over 3.25 per cent of fat, even including all the poor samples.

Sample 13 contained 2.57 per cent. fat, and 9.16 per cent. other solids. A sample taken at the farm a month

later showed 3.76 per cent. fat. In this case the conditions are rather unusual. The milk brought from the farm to the dairy is emptied into an earthenware vessel. Small cans, varying in size according to the requirements of various customers are then filled from this vessel and taken direct to the consumers' houses. It was from one of these small cans the first sample was taken. The vendor could offer no explanation, but it was thought that probably the milk in the earthenware vessel had not been properly stirred up, and I was instructed to write and warn the vendor.

#### HEALTH DEPARTMENT LABORATORY

Owing to the heavy extra work in connection with the furnishings for the Sanatorium extensions and other matters, I was not able to do as much work in the Laboratory as I could have wished. Some examinations of water were made, particularly the microscopic examination of the sediment during the autumn, when the water was rather turbid, apparently from insufficient flushing. The water was found to contain some vegetable debris, some filaments of moulds, some bacteria, diatoms, and some animalculæ, chiefly rotifers, but there was nothing found indicating any harmful contamination of the water. Some samples of milk were examined. A full account of the most important of these will be found on pages 162 and 164.

On two occasions the occurrence of anthrax gave me some work in the Laboratory. See page 166.

#### SUPERVISION OF FOOD SUPPLIES.

In 1903 I made a change in the administration of the Health Department as regards the supervision of the food supply, establishing a fresh system for the recording of

visits, so that we might be able to have more precise information than heretofore. Inspector Newby was charged with the duty of visiting all shops selling foods, and has, under the direction of the Medical Officer of Health, the entire supervision of the food supply, with the exception of the taking of Samples under the Food and Drugs Acts, which is still carried out by the Chief Inspector—Mr. Sanderson.

The new arrangement enables me to give a more complete idea of the condition of the Borough in regard to the food supply.

The following Table gives some information as to the numbers of the various shops :—

#### FOOD PLACES IN BLACKPOOL, 1905.

Butchers' Shops .....	105
Frozen Meat Shops .....	25
Fish and Chip and Tripe Shops .....	79
Fish Dealers (Mostly also selling Fruit and Game).....	40
Provision Shops (Mostly also sell Fruit) .....	250
Provision Shops (selling also Butcher's Meat) .....	25
Fruit Shops .....	67
Restaurants where Food is Cooked .....	58
Tea Rooms .....	6
Oyster Shops (not counting stalls) .....	9
Confectionery and Sweet Shops .....	182

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846

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It will be observed that the numbers are in excess of those in last year's report by no less than 74. Nearly all classes have increased, but the tea-rooms have decreased in number, many having given up this branch, and selling only confectionery or sweets. This helps to explain the increase in confectionery and sweet shops.

The above list includes a certain number of the milk sellers of the town, but these are separately considered in another list. During the season there were also about 40 meat stalls in different parts of the Borough, about a dozen oyster barrows, and a considerable number of ice-cream barrows.

The following table gives a summary of the visits paid by Mr. Newby during 1905 in connection with the Food Supply of the Borough.

#### SUPERVISION OF FOOD SUPPLIES.

##### SUMMARY OF VISITS.

Visits to	Milkshops and Dairies .....	646
„	Cowsheds in Borough .....	338
„	Cowsheds out of Borough .....	21
„	Ice Cream Stalls .....	212
„	Ice Cream Workshops .....	467
„	Public Slaughter-house .....	301
„	Other Slaughter-houses in Borough .....	744
„	Slaughter-houses out of Borough .....	30
„	Butchers' Shops .....	2,616
„	Other Shops .....	3,060
„	Restaurant Kitchens .....	131
Total 1905.....		<u>8,566</u>

These figures show what a large amount of work is done in order to ensure as far as possible that all food sold shall be sound and good. A moment's consideration will show the importance of this in a place like Blackpool, where in the season a visiting population has to be fed far outnumbering the resident population.

## UN SOUND FOOD.

It is gratifying to find out that of the immense amount of food consumed in Blackpool only a comparatively small amount had to be condemned and seized by the Health Authorities. No doubt vigilant inspection leads to dealers voluntarily destroying any tainted food instead of exposing it for sale. In many cases dealers come to the Health Office to obtain the Inspector's advice in regard to doubtful articles of food, and, in most cases, vendors have willingly given up food considered unsound by the Inspector. In two cases it was thought advisable to seize the food formally, and have it taken before a magistrate and condemned. In one case a pig weighing 248 lbs. was found to be affected with tuberculosis. It had been sent into the Borough by a cottager, and as we considered he was probably ignorant of the diseased condition, no prosecution was instituted.

In the other case 55 lbs. of strawberries were seized and condemned by magistrate's order.

FOOD SEIZED AND DESTROYED WITH CONSENT  
OF OWNER.

17 Frozen Livers.	16 Plaice.
22 Frozen Rabbits.	10 Chickens.
20½ lbs. of Pork.	1 Duck.
14 lbs. Potted Meat.	140 lbs. of Bruised Beef.
1 box Bloaters.	62 Bananas.
356 lbs. Halibut.	4 lbs. Strawberries.
1 Halibut.	6 lbs. Black Currants.
1 box of Mixed Fish.	

At the Public Slaughter-house the following were taken and destroyed as unfit for food :—

Livers affected with flukes of 43 heifers, 3 cows, 10 bullocks, and 64 sheep.

Carcases of 2 sheep found dead in the field.

Carcase of one lamb found dead in pen with throat cut and disembowelled.

One calf (38½lbs.) with dropsy.

2 fore quarters of Calf (35lbs.) owing to abscess in lung.

1 sheep's neck and breast, owing to abscess.

18 lbs. of bruised beef.

One carcase of bullock, dead of anthrax.

The following were the instances in which carcasses were discovered at the Public Slaughter-house affected with tuberculosis. In every case the owners freely consented to deliver up the diseased portions for destruction, and I willingly acknowledge the goodwill which the butchers, both at the Slaughter-house and in the town generally have shown to the Health Department, and the cheerful way in which they have surrendered any carcase which we considered could not be passed for food.

The entire carcasses of one cow, weighing 404 lbs. ; 1 heifer, 488 lbs. ; 7 pigs, weighing altogether 935 lbs., were destroyed owing to serious tuberculosis.

On one occasion in April, one butcher had the unfortunate experience of having to give up no fewer than 4 pigs in one day owing to tuberculosis. Two were very badly affected ; in the others the disease was not so advanced, yet the carcasses were not fit for food.

In addition two forequarters of a calf (51 lbs.) and 4½ lbs. of meat from a cow were also destroyed.

In 13 cases there were either extremely slight or doubtful traces of tuberculosis in the carcasses, and as a safeguard the viscera were destroyed and other precautions taken.

At the Private Slaughter-houses the entire carcase of one heifer (560 lbs.) 56 lbs. of beef, and viscera of another heifer, and the lungs and pleura of a third have been destroyed for tuberculosis more or less serious.

In three instances Mr. Newby has been called to see carcasses outside the Borough, but no seizures have been made in connection with these visits.

### SLAUGHTER-HOUSES.

There are three private Slaughter-houses in the Borough, and 744 inspections have been made of these during 1905, by Mr. Newby, the food Inspector. They have usually been found well kept and properly cleansed, and the owners have given every facility to the Inspector.

Slaughter-houses were erected by the Corporation in 1895, consisting of a Public Slaughter-house, and private Slaughter-houses let to various butchers. These were inspected on 301 occasions. Nine of the private slaughter-houses were let to the following :—Mr. J. Cocker, Mr. J. Holt, Mr. Garsden, Messrs. Bridge and Hull, Messrs. Rainford and Valiant, Messrs. E. and T. Sowerby, Mr. W. Sharples, Messrs. Ashurst and Hull, and the Co-operative Society.

The Public Slaughter-house was regularly used by Messrs. Barlow, Coupe, Cropper, Harrison, Lane, Mitchell, Noble, Sheard, Waring, and Whetman. The pig slaughter-house was used regularly by Messrs. Cotton, Robinson, and Walker, and by the Argenta Company and the Co-operative

Society. The public have, therefore, the satisfaction of knowing that the above-mentioned firms so conduct their business that both the animals and the carcasses are subject to the inspection of public officials.

A certain numbers of other butchers use the slaughter-houses occasionally, but not regularly.

The following is a summary of the total number of animals slaughtered in the Corporation Slaughter-houses during 1905, as compared with the previous year :—

	1904	1905
Beasts—Cows .....	102	65
Heifers .....	1,637	2,019
Bullocks .....	713	622
Bulls .....	32	39
	———— 2,484	———— 2,745
Calves .....	674	703
Sheep .....	33,368	36,208
Pigs .....	1,267	1,240
	————	————
	<u>37,793</u>	<u>40,896</u>

These figures show a large increase in the number of animals killed from the figures of 1904.

Tenders have been received for the construction of a shed over the cattle-pens north of the Slaughter-houses, with galvanised iron sheeting on the north side and at both ends, and with galvanised iron roof, but open on the south side. The tender of Messrs. Walker Bros., Walsall, was accepted, and we may expect to have this useful addition completed at an early date.

## DAIRIES, COWSHEDS, AND MILKSHOPS.

A very considerable number of persons are employed in the milk supply of the town, and owing to the great increase in the demand during the Season constant changes are going on, and great vigilance is required to see that all milk vendors are duly visited and registered.

The following Table shows particulars as to the milk supply of the town, which may be of some interest.

### LIST OF MILK SELLERS IN THE BOROUGH DURING 1905.

Dairies selling by retail .....	13
Provision Dealers selling by retail .....	44
Stationers selling by retail .....	1
Butchers selling by retail .....	5
Persons meeting farmers' carts on road and getting milk and delivering it direct, not taking it to house.....	11
Tea Rooms and sweet shops selling in glasses as refreshments when asked for .....	73
Dining rooms selling in glasses as refreshments when asked for .....	15
6½d. Bazaars selling from soda fountain .....	2
Sterilised Milk in bottles .....	5
<hr/>	
Total .....	169
No. of Cowsheds in Borough during 1905, the occupiers of which sold Milk during the year .....	51
Farmers registered as bringing Milk into the Borough from outside districts (Marton, Little Marton, Carleton, Hard- horn, Weeton, Poulton, Staining, Bispham, Thornton, St. Annes, and Elswick .....	139
<hr/>	
Total .....	359
To these should be added:—	
Ice Cream Dealers on the register, as Ice Cream dealers under our Local Act are "Purveyors of Milk" .....	129
<hr/>	
Total .....	488
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During 1905, as seen on page 155, Mr. Newby paid in all 338 visits to cowsheds in the Borough, 21 to cowsheds out of the Borough, 646 to milkshops and dairies, 212 to ice-cream stalls, and 467 to ice-cream workshops. During the year 60 milk dealers and 53 ice-cream dealers have been registered as purveyors of milk, and 103 certificates of registration have been delivered.

Mr. Newby has endeavoured to persuade vendors to take special precautions to keep milk and ice-cream sold clean and free from infection. The ice-cream dealers especially have been strictly looked after. In the case of ice-cream stalls the Inspector has insisted on their having two buckets of water for the washing of glasses, &c., so that when one is away, being filled with clean water, they can use the other. The conditions of ice-cream workshops have also been much improved in many cases, and some have been condemned and given up. Others have had alterations made to make them more sanitary. Altogether we may be satisfied that considerably better conditions prevail in regard to the ice-cream business than in any previous year.

No samples of ice-cream were taken during the year for bacteriological analysis.

Four samples of milk were sent to Professor Delépine for examination for tubercle bacilli. In one case the sample was from a single cow, suspected of tuberculosis. In another case the milk was the mixed milk of eleven cows, the 3rd came from 20 cows, and the 4th from 18 cows. All the samples proved to be free from the germ of tuberculosis. Apparently, although tubercle is fairly common in cattle in this district, it is

not often that the udder becomes affected, as not a single sample of milk from Blackpool has been proved to contain the tubercle bacillus. Of course, the number of samples has been very small, and it would probably be advisable to have more samples examined.

I am afraid some farmers are not so particular as they should be in excluding the milk of diseased cows. Frequently when cows are suffering from inflammation of the udder the milk from these cows, although absolutely unsuitable for food, is mixed with milk from other cows and sent to consumers. A bad example of this came under my notice in December. Owing to complaints made to me by a resident in the town that milk delivered at his house had caused illness in a child, I asked for a sample of the milk, and examined it microscopically. I found a considerable amount of blood and matter present, showing that it came from a cow with a diseased udder. After some trouble we found the farm (outside the Borough), from which the milk came. I instructed Mr. Newby to go and examine the cows. He did so, and found one seriously affected. The farmer was then instructed to remove this cow from the shippoon, to isolate her until the disease was cured, and on no account to let any of her milk be used for food of man. Mr. Newby visited at intervals and found that these instructions were carried out.

The work of improvement of the Sanitary conditions of the cowsheds in the Borough has proceeded during the year, and in several instances the shippoons have been converted into excellent cowsheds, with good impervious floors, sufficient air-space, and ample light and ventilation. Alterations have been made at 4 farms, affecting 5 ship-

pons. One cowshed, which formerly had 461 cubic feet of air space for each cow, has had the ceiling raised so as to give 615 cubic feet for each cow.

Two shippons, where formerly each cow had only 400 cubic feet, have been altered to give 603 cubic feet for each of 16 cows. Another old dark miserable shippon, where 6 cows were kept with an air-space of only 273 cubic feet each, has been altered ; floor concreted, light and ventilation supplied, a boarded roof put in place of slates, and an air-space allowed for each cow of 675 cubic feet.

There still remain three farms where alterations have not yet been made, although in two cases definite promises have repeatedly been given.

At two other farms where shippons have been altered there is in each case a shippon occasionally used which has not been made to conform to regulations.

Along with the improvement in the cowsheds, I am of opinion that during the last few years there has been a decided advance in the general standard of cleanliness in regard to dealing with milk. The milk floats coming into Blackpool are kept cleaner, and we have not so often to complain of men coming in the floats with filthy clothes and boots.

There is undoubtedly still room for much improvement and I should like to find some of the farmers undertaking the grooming of cows before milking, and insisting on the milkers washing their hands.

The dirty conditions under which many cows are milked are readily recognised by making a microscopical and bac-

teriological examination of the sediment. This is often very filthy and objectionable. Also the dirty conditions at the time of milking result in a larger number of bacteria getting into the milk immediately after it leaves the cow, and the more there are present then, naturally the greater will the multiplication be after the lapse of some hours, particularly during warm weather. This leads to the milk becoming sour more readily, and also increases the possibility of its causing diarrhœa in children.

I made a careful examination of some milk from a Blackpool shippon, at which sufficient care is not taken in milking.

Mr. Newby, at my request, procured a sample of this milk taken at the farm and placed at once in a sterilised flask. An extremely minute quantity of this milk was taken, within half an hour after milking, and a bacteriological culture plate made, which showed, after incubation, the number of colonies which had developed represented a number corresponding to about 7,500 to each teaspoonful.

At the time of making the first cultivation plate (*i.e.*, half-an-hour after milking), the remaining milk had been divided into two portions, each in a sterile vessel. One of these was kept for 48 hours on ice, the other was kept for 48 hours also, but at the ordinary room temperature in November. Both were carefully sealed to prevent the entrance of germs from outside. But whilst the number of germs in the sample kept at the freezing point had actually diminished in number, those in the sample kept at the ordinary temperature had multiplied to the very large number of over 5 millions to each teaspoonful.

It is worth noticing that special care was taken from the very beginning not to allow any outside germs to get into the milk, so that the whole of this astounding number had developed from the germs which got into the milk in the shippoon at the time of milking.

These experiments show the enormous importance (1) of cleanliness at the time of milking, (2) of as rapid delivery as possible from the farm to the consumer, (3) the advantage of keeping the milk cool, (4) the objections to keeping the milk for any length of time. The safest way is to boil all milk immediately on arrival at the house, particularly if for young children, and then to keep the milk covered, and in a cool place. Under these conditions milk will keep much longer.

Milk which has undergone partial decomposition often causes diarrhœa in children, frequently with fatal results. This may be due partly to the microbes present in the milk, and partly to the poisons produced by those germs. Cans and bottles which have contained such milk retain these harmful germs, and infect the next lot of milk placed in them. For this reason all vessels used for holding milk should be cleaned most scrupulously with boiling water. Babies feeding-bottles especially should be carefully cleaned after each time they are used. They should be of simple construction to facilitate disinfection, and with only a nipple and no tube. The old form with the long tube should be relegated to some museum for obsolete curiosities.

## ANTHRAX.

We had to deal with 2 cases of anthrax in cattle during the year, but fortunately they were not of quite so sensational a nature as the previous year.

In March a beast was found dead in the shippon at the Public Slaughter-houses, and on examination of the blood I found anthrax bacilli present, thus revealing the cause of death. All the necessary procedure under the Contagious Diseases Animals Act was carried out, the premises disinfected, and the carcass destroyed by fire.

A second case occurred at a farm within the Borough, in August. A cow died suddenly, and Mr. Walker, the Veterinary Surgeon, was called in. He kindly gave me the opportunity of examining the blood bacteriologically. Anthrax germs were again found, the usual course of disinfection and cremation of the carcass being adopted.

## PUBLIC MORTUARY.

In 1903 a new mortuary was erected under the supervision of the Sanitary Committee. It contains a mortuary room, post-mortem room, and doctor's room, as well as a passage for friends or a jury to view the bodies. Accommodation for seven bodies is provided. As the arrangements for the holding of inquests, and the removal of bodies to the mortuary are usually made by the police, it was ultimately decided that the management and control of the mortuary should be transferred to the Watch Committee. During 1905 the bodies of 5 males and 1 female were taken to the mortuary.



## PART IV.



### BLACKPOOL METEOROLOGICAL OBSERVATORY.

The new Blackpool Observatory, erected in 1903, is placed on rising ground in an open field close by a bridge crossing the railway behind the New Road Cemetery. The site is about half a mile from the old Sanatorium site, and is about 70 feet above mean sea-level. The Observatory building is of brick relieved by stone-work, and lighted by windows on the north and south sides. The building is placed four-square to the point of the compass, the doorway looking east. It is twelve feet square, nine feet high, and the floor is about two feet higher than the adjoining ground, requiring three steps at the doorway. The roof is flat and formed of concrete, supported on iron girders, and access to the roof is obtained by a flight of steps in the interior of the building, leading up through a trap door. The roof is protected by a parapet three feet high.

From the centre of the roof projects to a height of 57 feet from the ground a vertical pole of cast-iron tubing, stayed by wire guy-ropes anchored to the ground. This

pole carries the "combined" Anemometer and Anemoscope head and wind vane. The wind vane has a copper mouth-piece and aluminium wings, and measures three feet from end to end. From the head one-inch tubes pass down alongside the anemometer pole, and through holes in the concrete roof to the Dines' recording instrument placed on the floor of the Observatory.

On the roof of the Observatory is placed also a wooden stand bearing the Campbell-Stokes Sunshine-recorder. This is placed some 12 feet above the roof, or 25 feet above the ground level.

In the Observatory room is placed also the Fortin barometer. The Observatory contains also a telephonic installation, so that messages in regard to the weather may be communicated without delay.

The grass enclosure is about 65 feet to the south-east of the Observatory and 67 feet above mean sea-level, and is 24 feet square. It contains in the centre a new 5in. rain-gauge, with M.O. pattern rim. To the east of this is fixed the Negretti & Zambra recording rain-gauge, whilst on the west is fixed one of Halliwell's recording rain-gauges. The Stevenson screen, with its instruments occupies the centre of the north side of the enclosure, and on the centre of the south side is fixed the 4-feet earth thermometer. East of this, two solar radiation thermometers are placed four feet above the ground, one a bright bulb *in vacuo* and the other a black bulb *in vacuo*. Owing to the malicious mischief of some trespassers, who broke the first instrument by throwing stones, I had these instruments for a time surrounded with a wire cage. But I observed that there was some reason to think that even though air and sunlight

could apparently reach the instruments perfectly freely, the instruments were recording too low figures. On September 21st I had the wire cage removed, and immediately found my surmise confirmed, as the black bulb instrument at once rose several degrees. Since that day, therefore, the instruments have been left uncovered. This means unfortunately, that our figures for the radiation thermometer records have been too low for the period from January, 1904, to September, 1905.

Near the south-east corner of the enclosure a minimum recording thermometer with horse-shoe bulb is supported close to the grass, and gives the lowest temperature during the 24 hours.

When the new rain-gauge was first fixed the readings were occasionally considerably below those of the old rain gauge in the Sanatorium grounds, particularly with strong westerly winds. I therefore thought it desirable to build a low earth-mound partly round the enclosure to act as a wind-shield, with the result that though the figures recorded often differ, the total amounts over a period of time come out surprisingly close. Thus, during 1905, the old rain-gauge at the Sanatorium registered 27.67 inches of rain, whilst 26.96 inches were registered by the new gauge.

The equipment of the Department consists of :—

In or on the new Observatory building :—

- (i) A Standard Fortin Barometer.
- (ii) A Campbell-Stokes Sunshine Recorder.
- (iii) A Wind Vane and a Patent Pressure Tube Anemometer.
- (iv) A Baxendell's Recording Anemoscope.
- (v) A Recording Barograph.

## IN THE GRASS ENCLOSURE :—

(vi) A Stevenson Screen, containing wet and dry bulb and maximum and minimum thermometers.

(vii) An Earth Thermometer at a depth of four feet.

(viii) A Rain Gauge, 5in. M.O. pattern rim.

(ix) One Negretti & Zambra's Recording Rain-gauge.

(x) One solar radiation maximum thermometer, bright bulb, *in vacuo*.

(xi) One solar radiation maximum thermometer, black bulb, *in vacuo*.

(xii) One terrestrial radiation(or Minimum on Grass) Thermometer.

(xiii) One Halliwell's Patent Recording Float Pattern Rain-gauge.

## RETURNS AND REPORTS.

The Blackpool Observatory is now recognised by the Meteorological Society as a Second Order Station. This requires that observations should be taken at 9 a.m. and 9 p.m. daily, and readings recorded of all the chief instruments. Weekly and monthly summaries are also supplied to the Meteorological Society. The Government Meteorological Office have also recognised the Blackpool station, and I have arranged for daily information to be sent to the London Office. A telegram is sent at 6 p.m., which gives the thermometer and barometer reading, the amount of sunshine, direction of wind, and the kind of weather during the day. This information is communicated to the press, and appears in the London daily papers next morning.

In addition a post card is despatched every night, giving the 9 p.m. readings, and the records are published on page 4 of the "Daily Weather Report" issued the following morning from the Government Office.

As it is impossible for the observer to get down to the Post Office in time after the 9 p.m. reading, I have been able to arrange, through the courtesy of Mr. Fox, for the officials at the Conservative Club, in Victoria Street, to receive the message by telephone, and fill up and post the daily post card. I have to acknowledge my indebtedness for this privilege.

During 1905, a great deal was done to supply prompt information as to the Blackpool weather to the papers in different parts of the country. Telegrams recording the state of the weather were sent each forenoon throughout the year to the Exchange Telegraph Company, London, "Lancashire Daily Post," "Bolton Daily Chronicle," "Bolton Evening News," "Huddersfield Examiner," "Liverpool Echo," "Manchester Evening News," and an evening telegram was also sent to the "Liverpool Daily Post and Mercury," "Liverpool Courier," "Birmingham Daily Post," "Manchester Courier," "Morning Leader," London; "Huddersfield Daily Chronicle," and "Nottingham Daily Guardian." During the summer months morning or evening telegrams were sent to 25 daily papers.

There can be no doubt that the increased publicity given to our weather records, and our improved status as a Second Order Station, have been of material advantage to Blackpool. Our sunshine record during 1905 was so persistently good as to be a constant advertisement of the town.

As in previous years the observations have been taken by Mr. Harry Smith, and I have much pleasure in acknowledging the cheerfulness and faithfulness with which he has carried out this responsible work, which has been more exacting than ever since the commencement of the second order observations, which involve much extra work. I am glad that the Advertising Committee have agreed to allow him an annual honorarium in acknowledgment of the binding nature of his work, and the ability and zeal with which he has carried it out. Inspector Cookson has recently been trained to act as deputy-observer when necessary, and seems likely to be a very efficient substitute when Mr. Smith cannot take the readings. The chief clerk, Mr. Berry, and Mr. Edward Smith, have also given important help in the keeping of the records, and the various calculations required for the returns.

The chief events in the history of the Observatory for the year are the acquisition of a recording barograph from Armstrong, of Manchester, and of a Baxendell recording Anemoscope. The barograph is one of the ordinary pattern aneroid recording type, and is valuable for two purposes. First, it is a useful check on a possible error of the observer of 0.5 inch in reading the Fortin's barometer, and secondly, the tracing being continuous it gives valuable indications of any changes between the 9 a.m. and 9 p.m. readings. Some short, rapid depressions are admirably shown by the chart. One such occurred on November 26th, and the chart for the day gives an admirable idea of the disturbance of atmospheric specific gravity. The readings are apt to lag a little behind the actual changes, and not to go down so far or rise so high, but this is probably an imperfection to be expected. The other new in-

strument which has been added is a Baxendell's anemoscope. This now completes the equipment, which has been in view since the establishment of the new Observatory. The object of this instrument is to mark on a chart every change of direction of the wind as it occurs for the whole 24 hours. Previously, wind directions were only judged by observations at four fixed hours during the day, and practically no notice was taken of the night. Now we shall be in a much better position to judge exactly what proportion of time during a year is taken up by the prevalence of any particular wind.

The mechanism of the instrument is simple but very ingenious. The combined anemometer and anemoscope head and wind vane is so arranged that a slender metal rod attached to the wind-vane passes down inside the hollow vertical pole which projects above the Observatory roof. At the lower end, this metal rod has attached to it a hollow drum for holding the recording chart, and, of course, this turns with the motion of the vane. A writing pen is fixed in a definite position so as to make a mark on the portion of the chart which comes opposite to it. By a clockwork pendulum arrangement this pen falls gradually in a vertical line so as to traverse the whole width of the chart during the 24 hours. The oscillations of the wind are thus shown as the chart moves round with the motions of the vane.

#### METEOROLOGY, 1905.

The weather during 1905 was very bright, fine, and exceptionally dry. There were 1,757.9 hours of bright sunshine recorded, which exceeds the average for the 20 years 1881-1900 by 395.7 hours, and 1904 by 218.8 hours. It is

the largest amount ever recorded in Blackpool, as will be seen from the following table :—

BRIGHT SUNSHINE IN BLACKPOOL, DURING 20 YEARS.

YEAR.	HOURS.	YEAR.	HOURS.	YEAR.	HOURS.	YEAR	HOURS
1886	1,232.6	1891	880.2	1896	1,367.2	1901	1,687.4
1887	1,555.8	1892	1,384.6	1897	1,485.6	1902	1,522.8
1888	1,117.0	1893	1,497.3	1898	1,386.2	1903	1,474.2
1889	1,300.1	1894	1,310.2	1899	1,481.7	1904	1,539.1
1890	1,160.8	1895	1,470.3	1900	1,406.1	1905	1,757.9

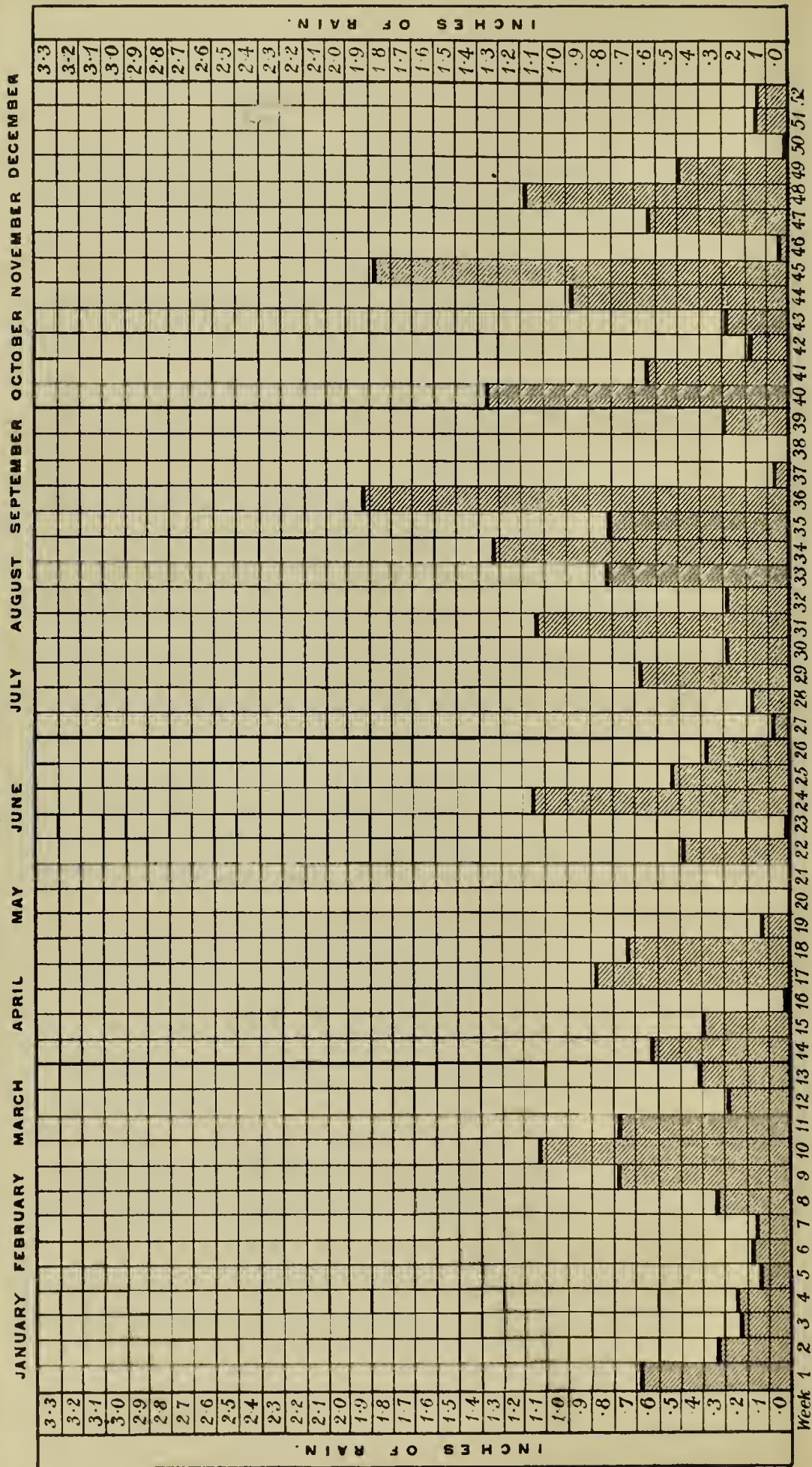
I am inclined to think that probably we missed a certain amount of sunshine in the early morning at the old station in the Sanatorium grounds, and that the present better exposure gives more correct records. I cannot account for some of the low figures recorded before 1892. Between 1895 and 1900 we may have lost some sunshine through a defective ball.

There were 311 days (or 85 per cent.) during the year on which bright sunshine was recorded, and only 54 sunless days. In June bright sunshine was registered on every day, whilst July, August, and September had only one sunless day each.

The brightest days of the year were May 17th, with 14.9 hours, June 12th, 14th, 24th, 25th, and 26th, with 14.9, 14.6, 14.7, 15.6, and 14.2 hours respectively; July 4th, with 14.8 hours; July 7th, with 15.3 hours; and July 28th, with 14.2 hours.



CHART V. (Rainfall in Inches—weekly—1905).



The brightest months were March, with 159.2 hours ; May, with 237.5 hours ; June, with 264.8 hours ; July, with 244.9 hours ; and August, with 182.2 hours. The average number of hours was exceeded in every month, except April, which was half an hour below the average. The records for the other months, along with other information in this connection, will be found in the sunshine record table.

Rain to the amount of one-hundredth of an inch or more fell on 181 days, but on many occasions the fall was very slight. The total rainfall registered was only 26.96 inches, which is the lowest amount recorded since 1887, when the rainfall was only 25.15 inches.

The months of greatest rainfall were November, with 4.45 inches ; August, with 3.82 inches ; March, April, September, and October, with 2.67, 2.57, 2.78, and 2.76 inches. The months of least rainfall were May, with only 0.58 inch, and December, with 0.83 inch.

Gales occurred on 32 days during the year. On 25 days a velocity of 50 miles an hour or more was reached during the maximum gusts.

Snow fell on 5 days during the year, and hail on ten days.

No fogs occurred during the year.

As regards the winter months they all exceeded the average amount of bright sunshine, and I would draw attention to the comparison figures for three inland stations in Lancashire on page 176.

Climatic Conditions in Blackpool during the Winter Months of 1905 as compared with three Inland Stations in Lancashire :—

Meteorological Station.	JANUARY.			FEBRUARY.			MARCH.		
	Mean Shade Temp.	Hours of Bright Sunshine.	Rainfall in inches.	Mean Shade Temp.	Hours of Bright Sunshine.	Rainfall in inches.	Mean Shade Temp.	Hours of Bright Sunshine.	Rainfall in inches.
Blackpool .....	39.1	43.7	1.55	40.8	94.9	1.35	43.7	159.2	2.67
Bolton .....	38.2	13.7	2.23	40.2	48.2	2.86	43.6	82.3	3.81
Manchester (Prestwich) .....	38.6	22.5	2.28	40.6	47.7	2.08	43.9	113.3	3.89
Do. (Whitworth Park)	39.1	9.5	1.96	41.3	30.2	1.81	44.7	76.1	3.65
Stonyhurst .....	38.5	31.9	2.94	40.1	74.5	2.68	42.9	139.9	3.48
Meteorological Station.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Mean Shade Temp.	Hours of Bright Sunshine.	Rainfall in inches.	Mean Shade Temp.	Hours of Bright Sunshine.	Rainfall in inches.	Mean Shade Temp.	Hours of Bright Sunshine.	Rainfall in inches.
Blackpool .....	45.5	127.4	2.76	41.2	72.9	4.45	42.2	50.3	0.83
Bolton .....	44.3	56.7	5.06	40.6	14.7	5.11	40.2	11.4	0.78
Manchester (Prestwich) .....	44.3	74.6	3.46	40.9	26.0	4.02	41.1	21.4	0.68
Do. (Whitworth Park)	44.6	35.2	3.36	41.5	22.8	3.11	42.1	29.1	0.61
Stonyhurst .....	44.0	102.6	4.72	40.8	52.6	4.23	41.1	33.2	1.32

## EXTREMES FOR THE YEAR 1905.

The highest observed reading of the barometer at Blackpool (reduced to 32.F. and mean sea level) was 30.935 inches on January 29th at 9 a.m. The lowest reading was 28.601 on March 15th at 9 a.m. The greatest observed monthly range occurred in January, the range being 1.866 inches; the smallest observed range was in July, 0.572 inches.

The highest temperature recorded in the Stevenson Screen by the maximum thermometer was 81.0 degrees on July 9th; the lowest recorded by the minimum thermometer in the screen was 22.5 degrees on November 18th.

The highest temperature recorded by the black bulb solar radiation thermometer was 116.0 degrees on September 26th. The lowest temperature recorded by the minimum on grass thermometer was 12.7 degrees on November 19th.

The largest amount of sunshine recorded on any one day was 15.6 hours, on June 25th, and 15.3 hours on July 7th.

The largest amount of rainfall on any one day was 1.22 inches, on September 9th.

The highest wind velocity recorded during the year was 73 miles per hour during the maximum gust between 11 and 12 p.m. on November 26th.

## MAIN FEATURES OF THE MONTHS, 1905.

*January.*—Weather generally fine, but somewhat varied in character on several days. The first week was dull and mild, with slight falls of rain; bright, but squally weather was experienced during the second week; the early part of the third week was rough and unsettled, and with the exception of the 18th was very cold and dull; from the 22nd to the end of the month the weather was again fine and fairly bright. Mean shade temperature was 0.9 degree above average; 0.5 degree above Manchester; and 0.6 degree above Stonyhurst. Frost registered in shade on 10 days, and 15 days upon the grass. Lowest temperature recorded upon grass, 13.4 degrees on the 26th. Total sunshine 43.7 hours, or 7.2 hours above the average. Rainfall deficient, being 1.32 inches below average. Atmospheric pressure was high, and subject to considerable fluctuations. Gales occurred on the 6th, 9th, 11th, 12th, 15th, and 16th. A thunderstorm of short duration occurred on the 9th. Snow and hail fell on the 9th and 16th. Winds were chiefly from the south-east and west.

*February.*—A very mild and fine month, with abundance of bright sunshine. Shade temperature 1.4 degrees above average, 0.2 degree above Manchester, and 0.7 degree above Stonyhurst. The coldest day was the 24th, when 16.9 degrees were registered upon the grass. Frost registered in shade on 7 days, and upon grass on 11 days. Bright sunshine 32.4 hours above average. Rainfall—as in January—exceptionally low, being 0.92 inch below average. Atmospheric pressure was high, especially during the early part of the month. Gales occurred on the 1st, 2nd, 18th, 19th, and 27th. Prevailing wind west. Hail fell on the 11th, 19th, and 26th.

*March.*—Weather as in previous months was mild, bright, but rather squally during the early part of month. Mean shade temperature  $2\frac{1}{2}$  degrees above average, 0.2 degree below Manchester, but 0.8 degree above Stonyhurst. Frost registered in screen on 2 days, and upon grass on 9 days; lowest temperature recorded on grass, 15.3 degrees, on the 3rd. Rainfall 0.54 inch in excess of average. Bright sunshine again large in amount, being  $52\frac{1}{2}$  hours above average; there were only two sunless days. Barometric pressure was very low. Gales occurred on the 7th, 9th, 10th, 11th, and 15th. Lightning was seen on the 9th and 11th, and hail fell on the same days. Prevailing wind south-west.

*April.*—Weather cold, not as bright as usual, and at times very changeable. Bright sunshine, 148.0 hours, was half-an-hour below average, and the lowest amount recorded since April, 1899, yet it was one of the best records in the country. Shade temperature was 1.8 degrees below average, but 0.2 degree above Manchester, and 0.9 degree above Stonyhurst. Frost in shade on three days, and upon grass on 12 days; the lowest reading on grass being 15.8 degrees on the 8th. Rainfall 0.83 inch above average. Pressure was below average. Gales occurred on the 5th and 16th. Winds were mainly from the south-west and north-west. Snow fell on the 6th, 7th, and 24th. Hail fell on the 18th.

*May.*—A very bright, fine, and dry month. Mean shade temperature 0.9 degree below average, 1 degree below Manchester, and 0.7 degree below Stonyhurst. Frost registered upon grass on 9 days. Rainfall exceedingly small, being 1.45 inches below average, and is the smallest on record, except for the years 1895 and 1896. Bright sunshine very plentiful, and with the exception of the years 1896, 1897, and 1901 is the largest ever recorded. There were only two sunless days. Pressure was considerably higher than the preceding month, and well above the average. Prevailing winds north-west and south-west.

*June.*—A settled, dry, and very pleasant month. Sunshine again plentiful. Mean shade temperature was equal to the average, 1.3 degrees below Manchester, and 0.9 degree below Stonyhurst. On four days frost registered on grass. Bright sunshine 72½ hours above average, and again one of the largest amounts recorded in the United Kingdom. There were no sunless days; the brightest day was the 25th, when 15½ hours bright sunshine were registered. Rainfall 0.12 inch less than average. Pressure was below average. Winds chiefly from south-west and north-east. A gale occurred on the 21st.

*July.*—During the greater part of the month the weather was generally bright, warm, and fairly dry, but during the last week it was cooler, and at times showery. Mean shade temperature was 0.9 degree above average, 1.5 degrees below Manchester, and 0.1 degree below Stonyhurst. Rainfall was again deficient, being 1.40 inches below average. Bright sunshine plentiful, being 62.2 hours in excess of average; the brightest day was the 7th, when 15.3 hours were recorded. There was only one sunless day. Atmospheric pressure was high and steady throughout the month. Thunder was heard on the 2nd, 4th, 8th, and 9th. Westerly and south-westerly winds prevailed during the major portion of the month.

*August.*—The weather, though bright, was cooler than usual, and somewhat unsettled. Mean shade temperature was 1.8 degrees below average; 0.3 degree below Manchester, but 0.8 degree above Stonyhurst. Frost registered on grass on the 31st. Bright sunshine recorded on every day except one, and was 27.2 hours in excess of average. Rainfall 0.38 inch above average. Westerly winds predominated. Atmospheric pressure was rather unsteady, and below the mean for the month. Gales occurred on the 18th and 19th. Thunder storms occurred on the 1st and 3rd, and hail fell on the first.

*September.*—During the first nine days the weather was very unsettled and squally, but from the 10th there was a marked improvement, and from this date to the end of the month the weather was bright and pleasant. Mean shade temperature was 2 degrees below average, 0.1 degree above Manchester, and 1 degree above Stonyhurst. Frost was registered on grass on 3 days. Bright sunshine was 10.4 hours above average, but 34.1 hours below last year's total. There was only one sunless day. Rainfall was again low, being 0.79 inch below average. On the 9th 1.22 inches of rain fell, and of this amount 0.50 inch fell in 52 minutes (2-53 p.m.—3-45 p.m.) Atmospheric pressure was slightly below average, and during the early part of the month, unsteady. Gales occurred on the 2nd, 7th, 8th, and 10th. Lightning was seen on the 7th. North-easterly and south-westerly winds generally prevailed.

*October.*—At the commencement of the month, the weather, though generally fine, was rather cloudy and unstable in character, but from the 15th to the end of the month we were favoured with fine autumnal weather. Mean shade temperature was 3.4 degrees below average, 1.2 degrees above Manchester, and 1.5 degrees above Stonyhurst. Frost was registered upon grass on 13 days and in shade on 7 days. Bright sunshine was 37½ hours above the average. Rainfall was again very deficient, being 1.41 inches below average. Atmospheric pressure was fairly steady during the major portion of the month, but was very low on a few days at the beginning and end of month. Gales occurred on the 4th, 5th, 14th, and 15th. The winds were chiefly from the north-west.

*November.*—Climatic conditions were very unsettled during the greater part of the month, though there were many bright and fine intervals. It was colder than usual, the mean shade temperature being 2.4 degrees below average, this was 0.3 degree above Manchester, and 0.4 degree above Stonyhurst. Frost registered in shade on 6 days, and upon

grass on 13 days ; the lowest temperature on grass 12.7 degrees was recorded on the 19th. Bright sunshine 29.9 hours in excess of average. Rainfall exceptionally high, being 1.05 inches above average. Pressure was below the mean. Winds were generally from the south-east. Hail fell on the 6th and 23rd. Gales occurred on the 26th and 27th.

*December.*—A quiet and exceedingly mild and dry month. Shade temperature was 2.7 degrees above average, 1.1 degrees above Manchester and Stonyhurst. Frost recorded in screen on 3 days, and upon grass on 11 days. Rainfall was again very low, being 2.39 inches below average. Bright sunshine was 25.5 hours in excess of average. There was only one gale during the month. The general direction of the wind was south-west. Pressure in excess of normal.



BAROMETRIC PRESSURE \* corrected to 32° F.  
and mean sea level.

1905	Mean Pressure.	Difference from Average 1885-1900 (16 years) †	Highest	Lowest	Observed Monthly Range.
January .....	30.197	+ .247	30.935	29.069	1.886
February .....	30.123	+ .173	30.659	28.911	1.748
March .....	29.644	— .302	30.325	28.601	1.724
April .....	29.834	— .110	30.210	29.099	1.111
May .....	30.151	+ .172	30.511	29.118	1.393
June .....	29.974	— .062	30.403	29.673	0.730
July .....	30.037	— .121	30.296	29.724	0.572
August .....	29.854	— .156	30.309	29.270	1.039
September .....	29.975	— .025	30.398	29.375	1.023
October .....	30.028	+ .153	30.560	29.037	1.523
November .....	29.668	— .166	30.272	28.780	1.492
December .....	30.166	+ .252	30.909	29.364	1.545
Means .....	29.971	+ .005	Highest. 30.935	Lowest. 28.601	1.314

\* From observations at 9 a.m. and 9 p.m. daily.

† 9 a.m. readings only.

TEMPERATURE—Stevenson Screen Results.

(IN DEGREES FAHRENHEIT)

1905.	Mean Maxi- mum	Mean Mini- mum	Mean Temp. *	Mean Daily Range	Absolute extremes.			
					High- est.	Date	Lowest	Date
January .....	42.7	35.4	39.1	7.3	49.1	6th	24.0	16th
February .....	44.9	36.6	40.8	8.3	50.6	18th	26.2	24th
March .....	49.2	38.2	43.7	11.0	59.2	22nd	25.2	3rd
April .....	49.6	38.7	44.2	10.9	58.1	15th	27.5	8th
May .....	56.7	43.0	49.9	13.7	67.8	17th	32.0	22nd
June .....	65.6	48.3	57.0	17.3	76.1	23rd	37.8	10th
July .....	66.9	54.7	60.8	12.2	81.0	19th	45.6	4th
August .....	64.1	51.5	57.8	12.6	72.7	15th	42.2	31st
September .....	59.5	47.5	53.5	12.0	64.7	5th	34.7	21st
October .....	51.8	39.2	45.5	12.6	57.2	9th	28.6	20th
November .....	45.8	36.6	41.2	9.2	52.1	11th	22.5	18th
December .....	45.7	38.7	42.2	7.0	51.1	3rd	28.6	30th
Means .....	53.5	42.4	48.0	11.2	High'st 81.0	July 9th	Lowest 22.5	Nov. 18th

\* Mean of the daily indications (each for the 24 hours ending 9 p.m.)  
of the maximum and minimum thermometers in the screen.

## DURATION OF BRIGHT SUNSHINE AND AMOUNT OF CLOUD.

1905.	Campbell-Stokes Recorder.					Cloud	
	Total Bright Sunshine.  Hours.	Difference from Average 20 years (1881-1900).	Most Sunshine in One Day.		Number of Sunless Days.	9 a.m.	9 p.m.
			Amount. Hours.	Date.			
January .....	43.7	+ 7.2	5.6	18th	12	8.6	7.4
February .....	94.9	+ 32.4	8.7	22nd	6	7.4	6.2
March .....	159.2	+ 52.5	10.8	19th	2	6.8	6.7
April .....	148.0	— 0.5	13.0	22nd	5	7.1	7.6
May .....	237.5	+ 38.9	14.9	17th	2	6.9	7.1
June .....	264.8	+ 72.5	15.6	25th	0	6.5	6.6
July .....	244.9	+ 62.2	15.3	7th	1	7.1	6.9
August .....	182.2	+ 27.2	12.6	14th 24th	1	8.3	7.3
September .....	132.2	+ 10.4	10.6	14th	1	7.4	6.4
October .....	127.4	+ 37.5	9.5	5th 16th	4	7.3	6.2
November.....	72.9	+ 29.9	7.4	16th	8	7.7	7.3
December .....	50.2	+ 25.5	5.5	7th	12	8.3	7.8
Totals .....	1757.9	+ 395.7	Most 15.6	June 25th	54	Mean 7.5	Mean 7.0

## RAIN FALL.

1905.	Total Rainfall *	Difference from Average 35 years (1866-1900).	Number of days with 0.01 in. or more.	Greatest fall in one day. †	
				Amount.	Date
	Inches	Inches		Inches	
January .....	1.55	—1.32	17	.19	4th
February .....	1.35	—0.92	17	.25	25th
March .....	2.67	+ 0.54	20	.34	10th
April .....	2.57	+ 0.83	17	.55	26th
May .....	0.58	—1.45	6	.14	28th
June .....	2.04	—0.12	10	.94	17th
July .....	1.56	—1.40	15	.36	22nd
August .....	3.82	+ 0.38	19	1.01	25th
September .....	2.78	—0.79	16	1.22	9th
October .....	2.76	—1.41	13	.60	14th
November.....	4.45	+ 1.05	18	.74	11th
December .....	0.83	—2.39	13	.21	5th
Totals .....	26.96	—7.00	181	Greatest. 1.22	Sept. 9th

\* From 9 a.m. on the 1st, including each month the fall during the first nine hours of the succeeding month.

† 24 hours ending 9 a.m. next day.

# UNDERGROUND TEMPERATURES, AND SOLAR AND TERRESTRIAL RADIATION.

1905.	Mean Under- ground at 9 a.m. 4 feet.	Difference from Average 6 years. (1895-1900.	Mean Daily Max. Temp. in Sun.		Mean ex- cess of Black Bulb in vacuo over Bright Bulb in vacuo.	Mean Daily Minimum on short Grass.
			Black Bulb in vacuo.	Bright Bulb in vacuo.		
January .....	43.0	+0.4	54.9	46.1	8.8	31.5
February .....	42.7	+1.5	64.5	51.2	13.3	32.9
March .....	42.9	+1.2	69.8	55.0	14.8	33.6
April .....	45.2	+0.5	77.7	59.0	18.7	33.8
May .....	49.2	+0.1	92.1	69.8	22.3	38.2
June .....	53.8	-0.6	101.0	78.0	23.0	42.1
July .....	58.3	+0.6	102.5	79.6	22.9	50.6
August .....	58.3	-0.6	95.3	74.4	20.9	46.4
September .....	56.0	-1.9	93.4	71.3	22.1	41.1
October .....	51.7	-1.5	91.6	64.6	27.0	32.8
November.....	46.9	-2.7	70.8	53.2	17.6	31.5
December .....	44.9	-0.8	62.4	49.9	12.5	35.8
Means .....	49.4	-0.3	81.3	62.7	18.7	37.5

## TEMPERATURE EXTREMES. Solar and Terrestrial Radiation.

1905.	Black Bulb in vacuo		Bright Bulb in vacuo.		Minimum on grass.	
	Highest	Date.	Highest.	Date.	Lowest.	Date
January .....	70.9	30th	56.0	30th	13.4	26th
February .....	75.3	18th	59.7	18th	16.9	24th
March .....	80.2	26th	64.2	23rd	15.3	3rd
April .....	91.6	27th	69.6	15th	15.8	8th
May .....	107.1	18th	80.7	17th	24.2	22nd
June .....	112.7	25th	89.1	23rd 25th	25.2	11th
July .....	110.5	2nd 8th	91.6	9th	37.4	28th
August .....	103.8	6th	82.1	15th	30.0	31st
September .....	116.0	26th	81.3	29th	26.6	21st
October .....	109.0	4th	74.2	1st	18.5	22nd
November.....	93.8	8th	65.5	7th	12.7	19th
December .....	83.1	12th	58.8	3rd	24.0	30th
Year .....	116.0	Sept. 26	91.6	July 9	12.7	Nov. 19

## FORCE AND MOVEMENT OF THE WIND,

AS RECORDED BY THE DINES' RECORDING PRESSURE TUBE ANEMOMETER.

1905	Mean Daily Move- ment.	Absol. Max. for one hour	Date.	Rate in Max Gust	Date.	Gales occurred on these dates.
	Miles.	Miles.		Miles.		
January ....	365	41	6th	62	9th	6th, 9th, 11th, 12th, 15th, and 16th
February ...	349	35	27th	59	19th	1st, 2nd, 18th, 19th, and 27th
March .....	300	36	15th	62	15th	7th, 9th, 10th, 11th, and 15th
April .....	289	34	5th	56	5th	5th and 16th
May .....	192	22	1st	36	1st	—
June .....	265	28	21st	44	21st	21st
July .....	253	27	15th	41	15th	—
August .....	278	38	19th	58	19th	18th and 19th
September	313	32	8th	60	8th	2nd, 7th, 8th, and 10th
October ....	309	40	4th	62	4th	4th, 5th, 14th, & 15th
November...	272	54	26th	73	26th	26th and 17th
December .	333	31	19th	51	9th	19th
Mean .....	293	Highest 54	Nov'mbr 26th	Highest 73	Nov'mbr 26th	Total 32

## HUMIDITY.

1905.	9 a.m. Readings.			Mean relative humidity.		Differ- ence from Average at 9 a.m. 5 years. (1899-1903.)
	Dry Bulb.	Wet Bulb.	Dew point.	9 a.m.	9 p.m.	
January .....	39.3	37.9	35.9	87.8	90.0	—0.4
February .....	40.4	38.9	36.8	86.9	88.1	—0.7
March .....	44.5	42.5	40.1	84.9	88.6	+0.3
April .....	45.0	42.7	40.0	83.3	88.4	+4.2
May .....	52.7	50.1	47.6	83.2	90.5	+7.6
June .....	61.1	57.4	54.3	79.5	88.6	+5.0
July .....	62.8	58.4	54.8	75.9	86.9	—3.3
August .....	59.2	56.4	53.9	83.5	89.9	+6.0
September .....	55.7	53.2	50.8	83.8	91.0	+3.9
October .....	46.9	44.6	42.0	83.6	89.0	—0.1
November.....	41.6	40.5	39.0	90.6	94.0	+4.2
December .....	41.6	40.7	39.4	92.4	91.5	+4.7
Means .....	49.2	46.9	44.6	84.6	89.7	+4.2

# DIRECTION OF WIND AT BLACKPOOL DURING 1905.

OBSERVATIONS 4 TIMES DAILY, AT 9 A.M., 1 P.M., 6 P.M., AND 9 P.M.

1905	N.	N.N.E.	N.E.	E.N.E.	E.	E.S.E.	S.E.	S.S.E.	S.	S.S.W.	S.W.	W.S.W.	W.	W.N.W.	N.W.	N.N.W.	Calim.	No. of Observa- tions.
January ...	...	...	...	...	1	4	29	9	3	7	21	4	27	6	13	...	4	124
February	1	8	5	2	...	...	5	...	4	5	22	7	32	10	9	2	4	112
March .....	3	2	4	1	3	2	21	4	8	7	38	13	10	2	6	...	6	124
April .....	...	5	11	3	8	4	19	4	1	1	23	2	5	9	22	3	4	120
May .....	1	3	14	5	10	2	2	3	...	7	23	5	9	6	32	2	4	124
June .....	2	2	24	4	22	8	6	1	2	1	25	4	6	1	11	1	...	120
July .....	1	1	6	...	1	...	5	3	...	...	26	22	31	5	20	3	3	124
August .....	4	4	5	3	12	3	10	3	7	3	4	16	18	9	20	3	5	124
September	4	5	21	1	7	...	4	1	2	5	19	11	13	5	15	7	1	120
October ...	13	6	14	...	2	2	8	4	4	2	2	4	11	13	20	19	3	124
November..	5	9	15	2	11	6	26	5	4	5	12	4	10	3	2	1	4	120
December	...	1	4	2	5	9	19	14	10	10	24	2	11	11	2	...	...	124
Totals	34	46	123	23	82	40	154	51	45	53	239	94	183	80	172	41	38	1460



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## ***APPENDIX TABLES.***

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TABLE I.—VITAL STATISTICS.

Year	Population estim'd to Middle of each year	BIRTHS.		TOTAL DEATHS.					Deaths of Non- Residents register- ed in District	Deaths of Resi- dents registered beyond District	Nett Deaths at all ages belonging to the District.	
		Number.	Rate.*	Under 1 year of age.		Gross Deaths. at all Ages.					Number.	Rate.*
				Number.	Rate per 1000 Births registered.	Number.	Rate.*					
								6				
1	2	3	4	5	6	7	8	9	10	11	12	13
1895	32,943	882	26.7	182	206	661	20.06	21	123	6	538	16.33
1896	36,638	940	25.7	149	158	630	17.19	21	123	10	507	13.84
1897	40,234	1,055	26.25	202	191	746	18.54	21	132	23	614	15.26
1898	45,414	1,260	27.74	224	178	772	16.99	29	143	20	629	13.85
1899	48,200	1,318	27.34	243	184	862	17.88	27	150	22	712	14.77
1900	50,166	1,268	25.27	204	161	851	16.96	49	131	26	720	14.35
1901	50,750	1,162	22.90	195	168	847	16.69	47	131	23	716	14.11
1902	52,174	1,250	23.96	154	123	796	15.26	45	117	24	679	13.01
1903	53,015	1,218	22.97	165	135	804	15.17	50	121	30	683	12.88
1904	54,338	1,170	21.53	199	170	802	14.76	33	128	28	674	12.40
Averages for years 1895-1904.	46,387	1,152	25.04	192	167	777	16.95	34	130	21	647	14.08
1905	55,712	1,131	20.30	153	135	809	14.52	52	129	29	680	12.21

\* Rates in Columns 4, 8, and 13 calculated per 1,000 of estimated population.

NOTE.—Column 7 includes the deaths of all Residents occurring either within or without the District, and of all Visitors dying within the District. Column 11 includes deaths of Blackpool Residents in Kirkham Workhouse and elsewhere without the Borough.

**TABLE II.**  
Vital Statistics in Wards (Residents only).

Names of Localities.	1.—CLAREMONT				2.—TALBOT.				3.—BANK HEY.				4.—BRUNSWICK.				5.—FOXHALL.				6.—WATERLOO.				7.—KIRKHAM WORKHOUSE.			
	Population estimated to middle of each year.	Births registered	Deaths at all ages	Deaths under one year.	Population estimated to middle of each year.	Births registered	Deaths at all ages	Deaths under one year.	Population estimated to middle of each year.	Births registered	Deaths at all ages	Deaths under one year.	Population estimated to middle of each year.	Births registered	Deaths at all ages	Deaths under one year.	Population estimated to middle of each year.	Births registered	Deaths at all ages	Deaths under one year.	Population estimated to middle of each year.	Births registered	Deaths at all ages	Deaths under one year.	Deaths in Public Institutions outside Blackpool, other than allocated to Wards.	Births registered	Deaths at all ages	Deaths under one year.
Year.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.
1895	4,586	109	57	20	8,330	273	169	55	2,316	33	28	3	5,372	115	89	23	8,209	242	131	56	4,130	104	58	12	—	6	6	—
1896	5,521	140	64	20	9,102	295	153	40	2,291	36	26	9	5,881	125	83	20	9,208	246	117	41	4,635	88	54	7	1	10	9	—
1897	6,461	154	71	22	10,125	309	174	57	2,136	25	22	—	6,083	159	93	23	10,104	283	149	49	5,325	116	82	25	—	10	23	—
1898	7,572	169	93	24	10,527	369	163	58	2,136	37	28	7	6,413	161	101	35	12,489	377	157	60	6,277	132	67	22	4	15	16	—
1899	8,104	188	89	15	10,996	343	190	69	2,126	24	26	6	6,744	174	107	40	13,432	379	192	66	6,798	199	88	32	—	11	20	—
1900	8,749	180	87	17	11,317	345	185	47	1,926	24	18	1	6,907	165	112	30	14,052	384	230	73	7,215	170	88	21	—	—	—	—
1901	8,036	177	107	23	12,349	293	202	51	1,910	23	25	5	7,429	164	99	21	14,337	363	197	57	6,689	142	86	24	—	—	—	—
1902	8,658	199	85	22	12,320	320	190	47	1,905	25	28	1	7,765	147	95	12	14,605	387	203	53	6,831	172	78	13	—	—	—	—
1903	8,908	171	107	26	12,445	344	188	53	1,920	22	26	3	7,833	146	84	11	14,859	396	175	50	7,050	139	103	15	—	—	—	—
1904	9,241	179	100	26	12,458	325	177	56	1,927	26	30	6	8,153	135	90	22	15,270	355	194	54	7,289	150	83	24	—	—	—	—
Averages for years 1895-1904	7,584	167	86	22	10,997	322	179	53	2,059	28	26	4	6,858	149	95	24	12,666	341	175	56	6,224	141	79	20	1	5	7	—
1905	9,454	162	107	28	12,538	322	183	36	1,914	23	13	1	8,421	114	86	17	15,854	372	219	54	7,531	138	72	8	—	—	—	—

TABLE III.

VITAL STATISTICS.—Calculated on total RESIDENT Population of Wards.

WARD.	Population, 1905.	Birth Rate.			Death Rate.			Zymotic Rate.					
		1904	1905	1896 to 1900	1901 to 1905	1904	1905	1896 to 1900	1901 to 1905	1904	1905	1896 to 1900	1901 to 1905
Claremont.....	9,454	19.37	17.14	23.19	20.14	10.82	11.32	11.12	11.46	0.87	0.95	1.55	1.41
Talbot .....	12,538	26.09	25.68	32.04	25.82	14.21	14.60	17.39	15.14	2.01	1.36	2.87	1.94
Bank Hey .....	1,914	13.49	12.02	13.69	12.43	15.57	6.79	11.18	12.74	...	0.52	0.64	0.73
Brunswick .....	8,421	16.56	13.54	24.50	17.95	11.04	10.21	15.57	11.51	0.86	0.48	2.10	1.05
Foxhall .....	15,854	23.25	23.46	28.16	25.00	12.70	13.81	14.43	13.17	1.38	1.45	2.39	1.29
Waterloo .....	7,531	20.58	18.32	23.74	21.01	11.39	9.56	12.84	11.97	1.23	0.27	1.94	0.99

TABLE VII

Deaths, with Ages and Causes, of Children under 12 months old in 1905.

CAUSE OF DEATH.	AGES BY MONTHS.												TOTAL.											
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	1st Week	2nd Week	3rd Week	4th Week	1st month		2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
Premature Birth .....	12	4	5	1	1	1	1	24	3	4	2	33	1	1	...	1	...	...	...	...	...	...	...	36
Atelectasis .....	1	1	...	1	...	...	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2
Congenital Malformations .....	1	...	...	...	...	...	...	1	1	1	...	3	1	...	...	...	...	...	...	...	...	...	...	4
Whooping Cough .....	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	...	3
Measles .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteritis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	2	...	1	...	6
Diarrhoea .....	...	...	...	...	...	...	...	...	1	...	...	1	3	...	2	4	1	5	3	1	1	2	2	25
Erysipelas .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Syphilis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Liver Diseases .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dentition .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Other Diseases of the Digestive Organs .....	...	...	...	...	...	...	1	1	...	...	...	1	...	3	...	1	...	...	1	1	...	...	...	2
Convulsions and Diseases of Nervous System .....	...	...	...	1	...	...	...	1	2	...	...	3	3	...	1	...	2	2	1	...	...	...	...	7
Tubercular Meningitis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	12
Tabes Mesenterica .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	...	...	...	...	...	1
Other Tubercular Diseases .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	5
Debility .....	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Diseases of Respiratory Organs .....	...	...	...	...	...	...	...	2	...	1	3	2	2	2	2	2	1	3	2	...	2	1	3	13
Injury at Birth .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18
Navel Hemorrhage .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Suffocation (Overlain) .....	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Other Violence (Accident or Negligence) .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
All other causes .....	4	...	...	...	...	...	...	4	...	4	...	8	1	...	2	...	2	2	1	...	...	...	...	16
All causes .....	17	5	6	3	1	1	2	35	6	11	3	55	12	8	13	10	11	14	6	9	4	6	5	153

Length of Residence of Persons who died during the year 1905.

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**TABLE X.**  
Total Deaths from Various Causes for 17 Years.

POPULATION.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905
	21,661	24,312	23,846 Census	26,470	28,389	30,337	32,943	36,638	40,234	45,414	48,200	50,166	50,750	52,174	53,015	54,338	55,712
Small-pox .....	...	...	...	...	1	2	...	...	...	...	...	...	...	...	3	...	...
Measles .....	2	8	10	...	4	6	3	4	23	7	11	2	4	12	5	11	3
Scarlet Fever .....	1	5	4	4	11	4	11	9	6	5	4	7	15	7	9	5	8
Diphtheria .....	12	6	1	1	4	6	4	1	3	3	5	6	33	18	7	14	11
Whooping Cough .....	8	2	7	5	9	3	10	8	9	2	16	19	12	3	20	3	3
Croup, not spasmodic .....	6	8	4	1	4	3	...	5	2	2	...	See other diseases Respiratory Organs					
Typhus Fever .....	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Enteric Fever .....	8	3	4	4	5	8	12	13	15	16	16	23	16	14	9	5	10
Diarrhoea .....	11	23	24	10	41	13	69	33	52	101	81	55	41	10	25	38	30
Rheumatic Fever .....	...	2	4	1	2	3	2	4	7	3	7	3	5	4	3	1	6
Erysipelas .....	2	...	1	...	4	3	2	3	1	...	2	1	1	2	1	1	1
Phthisis .....	30	27	32	33	28	33	41	42	43	52	66	44	49	56	53	57	63
*Other Diseases of Respiratory Organs .....	64	95	137	102	118	67	131	112	150	138	152	152	133	127	114	114	101
†Diseases of Circulatory System	39	37	41	40	43	45	47	53	65	64	67	82	82	79	97	66	88
‡Deaths from Violence .....	15	8	15	8	7	11	14	16	9	16	14	23	29	30	27	38	27
Other Diseases .....	204	227	217	279	251	274	315	327	360	363	421	434	426	434	431	449	458

\* Up to 1900 only deaths from Pneumonia, Bronchitis, and Pleurisy were included.

† Up to 1900 only Valvular and other Diseases of the Heart were included.

‡ Up to 1900 only deaths from "Injuries" were included.

TABLE XI.

VITAL STATISTICS of Whole District during 1905 and Previous Years.  
(Being Table I. of the Local Government Board).

Year	Population estim'td to Middle of each year	BIRTHS.		TOTAL DEATHS REGISTERED IN DISTRICT.				Total Deaths in Public Institutions in District.	Deaths of Non-Residents registered in Public Institutions in the District.	Deaths of Residents registered in Public Institutions beyond the District.	Nett Deaths at all ages belonging to the District.	
		Number.	Rate.*	Under 1 year of age.		At all Ages.					Number.	Rate.*
				Number.	Rate per 1000 Births registered.	Number.	Rate.*					
1	2	3	4	5	6	7	8	9	10	11	12	13
1895	32,943	882	26.7	182	206	655	19.8	21	6	6	655	19.88
1896	36,638	940	25.7	149	158	620	16.9	21	5	10	625	17.06
1897	40,234	1,056	26.25	202	191	723	17.9	21	5	23	741	18.42
1898	45,414	1,260	27.74	224	178	752	16.5	29	10	20	762	16.78
1899	48,200	1,318	27.34	243	184	840	17.4	27	9	22	853	17.70
1900	50,166	1,268	25.27	204	161	825	16.44	49	9	26	842	16.78
1901	50,750	1,162	22.90	195	168	824	16.24	47	11	23	836	16.47
1902	52,174	1,250	23.96	154	123	772	14.80	45	16	23	779	14.93
1903	53,015	1,218	22.97	165	135	774	14.60	50	13	27	788	14.86
1904	54,338	1,170	21.53	198	169	774	14.24	33	6	26	794	14.61
Averages for years 1895-1904.	46,387	1,152	25.04	192	167	756	16.48	34	9	21	768	16.75
1905	55,712	1,131	20.30	152	134	780	14.00	52	16	29	793	14.23

\* Rates in Columns 4, 8, and 13 calculated per 1,000 of estimated population.

NOTE.—The deaths included in Column 7 of this Table are the whole of those registered during the year as having actually occurred within the District or Division. The deaths included in Column 12 are the number in Column 7, corrected by the subtraction of the number in Column 10 and addition of the number in Column 11.

By the term "Non-residents" is meant persons brought into the district on account of sickness or infirmity, and dying in public institutions there; and by the term "Residents" is meant persons who have been taken out of the District on account of sickness or infirmity, and have died in public institutions elsewhere.

The "Public Institutions" to be taken into account for the purposes of these Tables are those into which persons are habitually received on account of sickness or infirmity, such as hospitals, workhouses, and lunatic asylums.

TABLE XII.

VITAL STATISTICS of Separate Localities in 1905 and Previous Years.  
(Being Table II. of the Local Government Board.)

Names of Localities.	1.—CLAREMONT.				2.—TALBOT.				3.—BANK HEY.				4.—BRUNSWICK.				5.—FOXHALL.				6.—WATERLOO.				7.—KIRKHAM WORKHOUSE.			
	Population estimated to middle of each year.	Births registered.	Deaths at all ages.	Deaths under one year.	Population estimated to middle of each year.	Births registered.	Deaths at all ages.	Deaths under one year.	Population estimated to middle of each year.	Births registered.	Deaths at all ages.	Deaths under one year.	Population estimated to middle of each year.	Births registered.	Deaths at all ages.	Deaths under one year.	Population estimated to middle of each year.	Births registered.	Deaths at all ages.	Deaths under one year.	Population estimated to middle of each year.	Births registered.	Deaths at all ages.	Deaths under one year.	Population estimated to middle of each year.	Births registered.	Deaths at all ages.	Deaths under one year.
Year.																												
1895	4,586	109	78	22	8,330	273	191	62	2,316	33	33	3	5,372	115	107	24	8,209	242	163	59	4,130	104	77	12	—	6	6	—
1896	5,521	140	79	20	9,102	295	177	43	2,291	36	36	11	5,881	125	105	23	9,208	246	145	43	4,635	88	73	8	1	10	9	1
1897	6,461	154	89	27	10,125	309	196	60	2,136	25	29	1	6,083	159	121	25	10,104	283	185	57	5,325	116	98	30	—	10	23	2
1898	7,572	169	128	29	10,527	369	183	64	2,136	37	36	7	6,413	161	120	34	12,489	377	191	64	6,277	132	84	25	4	15	16	1
1899	8,104	188	114	15	10,996	343	213	76	2,126	24	40	6	6,744	174	130	42	13,432	379	226	70	6,798	199	110	34	—	11	20	—
1900	8,749	180	114	19	11,317	345	199	48	1,926	24	24	2	6,907	165	135	34	14,052	384	262	78	7,215	170	108	23	—	—	—	—
1901	8,036	177	135	27	12,349	293	226	54	1,910	23	28	5	7,429	164	120	22	14,337	363	223	62	6,689	142	104	25	—	—	—	—
1902	8,658	199	110	23	12,320	320	204	50	1,905	25	32	1	7,765	147	100	12	14,695	387	237	54	6,831	172	96	14	—	—	—	—
1903	8,908	171	126	26	12,445	344	202	56	1,920	22	34	3	7,833	146	102	13	14,859	396	211	52	7,050	139	113	15	—	—	—	—
1904	9,241	179	134	27	12,458	325	198	59	1,927	26	38	8	8,153	135	108	22	15,275	355	217	56	7,289	150	99	26	—	—	—	—
Averages for years 1895-1904	7,584	167	111	24	10,997	322	199	57	2,059	28	33	5	6,858	149	115	25	12,666	341	206	60	6,224	141	96	21	1	5	7	—
1905	9,454	162	131	28	12,538	322	196	36	1,914	23	19	1	8,421	114	104	18	12,854	372	248	58	7,531	138	95	11	—	—	—	—

Deaths of Residents occurring in Public Institutions beyond the District are included in Sub-columns *c* of this Table, and those of Non-residents registered in Public Institutions in the District excluded. (See Note on Table XI. as to meaning of terms "Resident" and Non-resident.")

Deaths of Residents occurring in Public Institutions, whether within or without the District, are allotted to the respective localities according to the addresses of the deceased.

# TABLE XIII.

Cases of Infectious Disease notified during the Year 1905.  
(Table III. of Local Government Board.)

NOTIFIABLE DISEASE.	Cases notified in whole district.						Total cases notified in each Locality.					No. of cases removed to Hospital from each locality.									
	At ages—Years						Claremont.	Talbot—(H).	Bank Hey	Brunswick	Foxhall	Waterloo	TOTALS.	Claremont	Talbot—(H).	Bank Hey	Brunswick	Foxhall	Waterloo	TOTALS	
	At all Ages	Under 1.	1 to 5	5 to 15	15 to 25	25 to 65.															65 and upwards.
Small-pox .....	3		1		1	1		3					3		3						3
Cholera .....																					
Diphtheria .....	48		20	19	5	4	10	21	3	3	11		48	3	3						6
Membranous croup.....	1		1								1		1								
Erysipelas.....	17		1		1	14	2	4	1	3	5	2	17	1							1
Scarlet Fever.....	200	1	50	127	17	5	32	52	1	26	74	15	200	30	51	1	26	71	13	192	
Typhus Fever .....																					
Enteric Fever .....	51		4	14	8	23	7	8	1	10	21	4	51	2	6	1	8	15	3	35	
Relapsing Fever .....																					
Continued Fever .....																					
Puerperal Fever .....	3				1	2	1	1		1			3								
Plague .....																					
Measles .....	871	41	366	436	16	12	112	226	12	156	245	120	871		2		1	1		4	
Rotheln.....	27	1	12	14			14	1	1		11		27							1	
Chicken-pox .....	152	18	53	79	1	1	10	61	5	18	35	23	152								
Totals .....	1373	61	507	689	50	62	4	188	377	24	217	403	1373	36	65	2	35	88	16	242	

NOTE.—Mark (H) is the locality in which the Isolation Hospital is situated.

TABLE XIV. (Being Table IV. of Local Government Board.) Causes of, and Ages at, Death during Year 1905.

CAUSES OF DEATH.	Deaths at the subjoined ages of "Residents" whether occurring in or beyond the district.						Deaths at all ages of "Residents" belonging to Localities, whether occurring in or beyond the District.						Total.	Total Deaths whether of Residents or "Non-Residents" in Public Institutions in the District.	
	All ages	Under 1 year	1 and under 5.	5 and under 15	15 and under 25	25 and under 65	65 and upwards	Claremont Ward.	Talbot Ward.	Bank Hey Ward.	Brunswick Ward.	Foxhall Ward.			Waterloo Ward.
Small-pox...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Measles ...	3	...	2	1	...	...	...	...	2	...	...	1	...	3	...
Scarlet Fever ...	6	...	3	3	...	...	...	...	2	...	1	2	1	6	8
Whooping-cough ...	3	3	...	...	...	...	...	1	...	...	...	2	...	3	...
Diphtheria and membranous croup	11	...	8	2	1	...	...	2	5	...	1	3	...	11	1
Croup ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fever { Typhus...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric ...	8	...	...	...	...	6	2	1	1	1	2	3	...	8	6
Other continued.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epidemic influenza	11	...	...	...	1	5	...	1	5	1	1	3	...	11	...
Cholera ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plague ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diarrhoea ...	30	25	3	...	...	1	1	6	7	...	2	14	1	30	...
Enteritis ...	8	6	1	...	...	1	...	...	2	...	3	3	...	8	...
Puerperal Fever ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Erysipelas...	1	...	...	...	...	...	1	...	...	...	...	1	...	1	...
Other septic diseases	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phthisis (Pulmonary Tuberculosis)	62	...	...	...	13	44	1	4	23	3	8	17	7	62	3
Other tubercular diseases	23	7	9	2	3	2	...	3	3	...	5	8	4	23	2
Cancer, malignant disease	57	...	1	...	1	36	19	13	13	...	9	15	7	57	6
Bronchitis...	38	2	3	...	...	12	21	4	7	2	4	14	7	38	...
Pneumonia ...	55	16	9	2	1	18	9	5	15	1	6	20	8	55	...
Pleurisy ...	1	...	...	...	...	1	...	...	1	...	...	...	...	1	...
Other diseases of respiratory organs	7	...	3	...	...	4	...	1	2	...	1	3	...	7	...
Alcoholism, cirrhosis of liver...	15	...	...	...	...	14	1	6	2	...	2	...	5	15	1
Veneral diseases	2	1	...	...	...	1	...	1	...	...	...	1	...	2	...
Premature birth...	36	36	...	...	...	...	...	10	6	...	6	12	2	36	...
Diseases and accidents of parturition	5	...	...	...	1	4	...	1	1	...	...	3	...	5	...
Heart diseases...	83	...	...	1	3	43	36	17	25	3	7	24	7	83	3
Accidents ...	21	1	3	1	3	8	5	2	8	1	2	5	3	21	4
Suicides ...	2	...	...	...	...	2	...	1	...	...	1	...	...	2	1
All other causes	305	55	14	8	14	121	93	52	66	7	43	94	43	305	17
All causes ...	793	152	59	24	41	323	194	131	196	19	104	248	95	793	52

TABLE XIVA. (Table V. of the Local Government Board.)

INFANTILE MORTALITY during the Year 1905. Deaths from stated Causes in Weeks and Months under One Year of Age.

CAUSE OF DEATH.		Under 1 Week	1-2 Weeks	2-3 Weeks	3-4 Weeks	Total under 1 month	1-2 Months	2-3 Months	3-4 Months	4-5 Months	5-6 Months	6-7 Months	7-8 Months	8-9 Months	9-10 Months	10-11 Months	11-12 Months	Total Deaths under 1 Year.	
All Causes {	Certified ...	32	6	10	3	51	12	8	13	10	10	12	5	8	4	6	5	144	
	Uncertified...	3	...	1	...	4	...	...	...	...	1	2	1	...	...	...	...	8	
COMMON INFECTIOUS DISEASES—																			
Small-pox...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Chicken-pox	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Measles ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Scarlet Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Diphtheria: Croup	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Whooping Cough	...	...	...	1	...	1	...	...	...	...	1	...	...	...	1	...	...	3	
DIARRHOEAL DISEASES—																			
Diarrhoea, all forms	...	...	...	1	...	1	3	...	2	4	1	5	3	1	1	2	2	25	
Enteritis ( <i>not Tuberculous</i> )	...	...	...	...	...	...	...	...	1	...	1	...	1	2	...	1	...	6	
Gastritis, Gastro-intestinal Catarrh	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	3	
WASTING DISEASES—																			
Premature Birth	...	24	3	4	2	33	1	1	...	1	...	...	...	...	...	...	...	36	
Congenital Defects	...	3	1	1	...	5	1	...	...	...	...	...	...	...	...	...	...	6	
Injury at Birth ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Want of Breast-milk	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Atrophy, Debility, Marasmus	...	2	...	...	1	3	2	2	2	2	...	1	...	1	...	...	...	13	
TUBERCULOUS DISEASES—																			
Tuberculous Meningitis	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	
Tuberculous Peritonitis: Tabes Mesenterica	...	...	...	...	...	...	...	...	3	1	1	...	...	...	...	...	...	5	
Other Tuberculous Diseases	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	
Erysipelas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Syphilis	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
Rickets	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	
Meningitis ( <i>not Tuberculous</i> )...	...	...	...	...	...	...	1	...	1	...	2	2	1	1	...	...	...	5	
Convulsions ...	...	1	2	...	...	3	2	...	...	...	...	...	...	...	...	...	...	7	
Bronchitis	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	2	
Laryngitis	...	...	...	...	...	...	...	...	...	...	2	2	...	...	1	3	2	16	
Pneumonia ...	...	...	...	...	...	...	...	2	2	1	2	2	...	1	1	...	...	1	
Suffocation, overlaying	...	...	...	...	...	...	1	...	...	...	2	2	1	1	...	...	1	21	
Other Causes	...	5	...	4	...	9	1	2	2	...	2	2	1	1	...	...	...	21	
		35	6	11	3	55	12	8	13	10	11	14	6	8	4	6	5	152	

Births in the year—Legitimate, 1,062; Illegitimate, 69. Deaths from all Causes at all Ages, 793. Population estimated to middle of 1905, 55,712

**TABLE XX.**

Table giving the total number of Births and Deaths (Residents and Visitors) with their corresponding rates in each quarter of the year 1905 :—

Quarter ending	Births.	Birth Rate.	Deaths.	Death Rate.	Deaths under one year.	Infant Mortality.	Seven Principal Zymotic Diseases	Zymotic Rate.
April 1st .....	278	20.03	190	13.69	27	97.12	9	0.65
July 1st .....	293	21.11	201	14.48	30	102.39	9	0.65
September 30th.....	284	20.46	212	15.27	46	161.97	31	2.23
December 30th .....	276	19.88	206	14.84	50	181.16	16	1.15
Year .....	1,131	20.30	809	14.52	153	135.28	65	1.17

TABLE A.

(Corresponding to Table D in former Reports.)

## ANALYSIS OF MORTALITY.

Residents and Visitors.

YEAR.	BIRTH RATE.	Annual rate of Mortality from						Proportion of Deaths under 1 year to 1,000 births (Infant Mortality).	Of Infants under 1 year.	Percentage of Total Deaths.					
		All Causes (gross D.R.)	All Causes (Corrected for Visitors).	Seven principal Zymotics.	Pulmonary Consumption.	Other Diseases of Respiratory Organs.*	Diseases of Circulatory System.†			Under 5 years.	65 years and over.	From seven principal Zymotics.	From Pulmonary Consumption.	From other Diseases of Respiratory Organs.	From Diseases of Circulatory System.
1886-90	25.18	17.6	15.4	2.11	1.21	3.19	1.40	150.0	21.5	34.3	20.8	12.3	6.9	18.3	8.1
1891-95	23.91	18.6	15.3	2.06	1.14	3.91	1.51	183.3	23.82	33.8	18.9	10.88	6.24	20.74	8.2
1896-1900	26.46	17.52	14.42	2.50	1.12	3.21	1.50	174.9	26.35	35.4	19.2	14.25	6.39	18.23	8.56
1901-1905	22.33	15.28	12.92	1.53	1.04	2.22	1.55	146.37	21.32	29.81	21.02	9.91	6.86	14.50	10.15
1891	22.36	20.0	18.2	2.03	1.2	5.4	1.60	192.6	21.5	34.1	20.1	10.2	6.3	27.0	8.1
1892	24.01	18.2	15.3	0.89	1.2	3.81	1.49	160.4	20.9	29.3	20.9	4.9	6.7	20.9	8.2
1893	22.47	18.7	14.9	2.68	0.98	4.14	1.51	210.3	25.1	33.2	18.6	14.1	5.2	22.1	8.0
1894	23.93	15.8	11.9	1.38	1.08	2.21	1.48	159.8	24.1	33.2	17.3	8.7	6.8	13.9	9.3
1895	26.77	20.06	16.33	3.31	1.24	3.98	1.43	206.0	27.49	39.3	17.4	16.47	6.19	19.76	7.10
1896	25.66	17.19	13.84	1.99	1.15	3.06	1.44	158.5	23.6	32.9	21.3	11.6	6.6	17.7	8.4
1897	26.25	18.57	15.29	2.78	1.07	3.75	1.62	191.3	27.0	37.8	18.0	15.0	5.8	20.1	8.7
1898	27.74	16.99	13.85	2.99	1.14	3.04	1.41	177.7	29.0	37.3	19.4	17.62	6.73	17.87	8.3
1899	27.34	17.88	14.77	2.75	1.36	3.15	1.39	184.4	28.19	36.5	18.1	15.42	7.65	17.63	7.77
1900	25.27	16.96	14.35	2.23	0.88	3.03	1.63	160.88	23.97	32.55	19.15	13.16	5.17	17.86	9.63
1901	22.90	16.69	14.11	2.38	0.97	2.62	1.62	167.81	23.02	32.59	18.42	14.29	5.79	15.70	9.68
1902	23.96	15.26	13.01	1.23	1.07	2.43	1.51	123.2	19.35	27.76	20.23	8.04	7.04	15.95	9.92
1903	22.97	15.17	12.88	1.47	1.00	2.15	1.83	135.47	20.52	28.48	23.26	9.70	6.59	14.18	12.06
1904	21.53	14.76	12.40	1.40	1.05	2.10	1.21	170.09	24.81	33.79	19.33	9.48	7.11	14.21	8.23
1905	20.50	14.52	12.21	1.17	1.13	1.81	1.58	135.28	18.91	26.45	23.98	8.03	7.79	12.48	10.88

\*Up to 1900 only deaths from Pneumonia, Bronchitis, and Pleurisy were included.

†Up to 1900 only Valvular and other diseases of Heart were included.

**TABLE B.**

(Corresponding to Table E in former Reports.)

Births and Deaths (Residents) in Each Quarter of the Year 1905 :—

Quarter Ending.	Births.	Deaths from all causes.	Seven principal Zymotic Diseases.	Pulmonary Consumption.	Other Diseases of Respiratory System	Diseases of Circulatory System.	Total Deaths under 1.	Under 5 years	65 years and over.
April 1st.....	278	167	8	10	32	13	27	40	50
July 1st.....	293	169	9	15	16	16	30	44	42
September 30th.	284	166	27	14	14	25	40	51	32
December 30th...	276	178	12	12	28	16	47	62	34
YEAR .....	1,131	680	56	51	90	70	144	197	158

**TABLE C.**

(Corresponding to Table F in former Reports.)

Shewing the several Death Rates (Residents) for each quarter in the year 1905 :—

Quarter ending.	Death Rate.		Birth Rate.	Infant Mortality	Per cent. of Total deaths of Deaths			
	From all causes.	From 7 Zymo-tics.			From 7 Zymo-tics.	Of Infants under 1 year.	Of Chil-dren under 5 years.	Of Persons 65 years and over.
April 1st.....	12.03	0.58	20.03	97.12	4.79	16.17	23.95	29.94
July 1st .....	12.18	0.65	21.11	102.39	5.33	17.75	26.04	24.85
September 30th .....	11.96	1.95	20.46	140.84	16.26	24.10	30.72	19.28
December 30th .....	12.82	0.86	19.88	170.29	6.74	26.40	34.83	19.10



## TABLE E.

(Corresponding with Table H in former Reports.)

Cases of Infectious Disease notified during the Years 1895-1905 (inclusive).

[illegible]

**TABLE F.**

(Corresponding to Table K in former Reports.)

	Estimated Population.	Rate per 1,000.				Total Births.	Total Deaths.	Total Infant Mortality.
		Births.	Deaths.		Seven Zymotics.			
			Gross.	Corrected for Visitors.				
1879.....	15,000	36.6	17.8	...	3.06	401	268	122
1880.....	15,000	34.0	22.7	...	5.0	510	341	206
1881.....	14,229	30.6	18.6	15.8	1.2	436	265	126
1882.....	16,000	30.0	22.9	21.0	2.8	480	367	221
1883.....	16,000	30.0	19.5	16.6	1.6	480	312	140
1884.....	17,212	29.8	19.0	17.1	2.14	513	328	146
1885.....	18,031	27.4	17.2	15.2	1.71	494	311	174
1886.....	19,550	25.9	18.9	16.5	2.71	508	370	152
1887.....	20,380	25.3	16.0	14.0	2.45	516	327	116
1888.....	20,540	24.5	15.6	13.2	1.65	504	322	137
1889.....	21,661	26.5	18.7	16.5	1.9	575	406	169
1890 .....	24,312	23.7	18.5	16.5	1.9	577	451	182
1891.....	25,310	22.3	20.0	18.2	2.03	566	507	193
1892.....	26,740	24.0	18.2	15.2	0.90	642	488	160
1893.....	28,389	22.4	18.7	14.8	2.64	638	532	210
1894.....	30,337	23.9	15.8	11.9	1.38	726	481	160
1895.....	32,943	26.7	20.06	16.33	3.31	882	661	206
1896.....	36,638	25.7	17.19	13.84	1.99	940	630	159
1897.....	40,234	26.25	18.54	15.26	2.78	1,056	746	191
1898.....	45,414	27.74	16.99	13.85	2.99	1,260	772	178
1899.....	48,200	27.34	17.88	14.77	2.75	1,318	862	184
1900.....	50,166	25.27	16.96	14.35	2.23	1,268	851	161
1901.....	50,750	22.90	16.69	14.11	2.38	1,162	847	168
1902.....	52,174	23.96	15.26	13.01	1.23	1,250	796	123
1903.....	53,015	22.97	15.17	12.88	1.47	1,218	804	135
1904.....	54,388	21.53	14.76	12.40	1.40	1,170	802	170
1905.....	55,712	20.30	14.52	12.21	1.17	1,131	809	135

**TABLE G.**

(Corresponding to Table I, in former Reports).

Shewing the Percentage of Total Deaths, of Deaths of Children under 5 Years of age, and of Persons over 65 Years of Age :—

	Total Deaths.	Under 5 Years of Age	65 and over	Per cent. of total Deaths, of Deaths.	
				Under 5 years of Age.	65 and over.
1884.....	328	101	68	30.7	20.7
1885.....	311	123	60	39.5	19.3
1886.....	370	133	70	35.9	18.9
1887.....	327	107	80	33.0	24.5
1888.....	322	103	61	32.3	18.9
1889.....	406	147	79	36.2	19.4
1890.....	451	156	100	34.5	22.2
1891 .....	507	173	102	34.1	20.1
1892.....	488	142	102	29.1	20.9
1893 .....	532	177	99	33.2	18.6
1894.....	481	100	83	33.2	17.3
1895 .....	661	260	115	39.3	17.4
1896 .....	630	207	134	32.9	21.3
1897.....	746	282	134	37.8	18.0
1898 .....	772	288	150	37.3	19.4
1899 .....	862	315	156	36.5	18.1
1900.....	851	277	163	32.5	19.1
1901 .....	847	276	156	32.6	18.4
1902.....	796	221	161	27.8	20.2
1903.....	804	229	187	28.5	23.3
1904.....	802	271	155	33.8	19.3
1905.....	809	214	194	26.5	23.98

